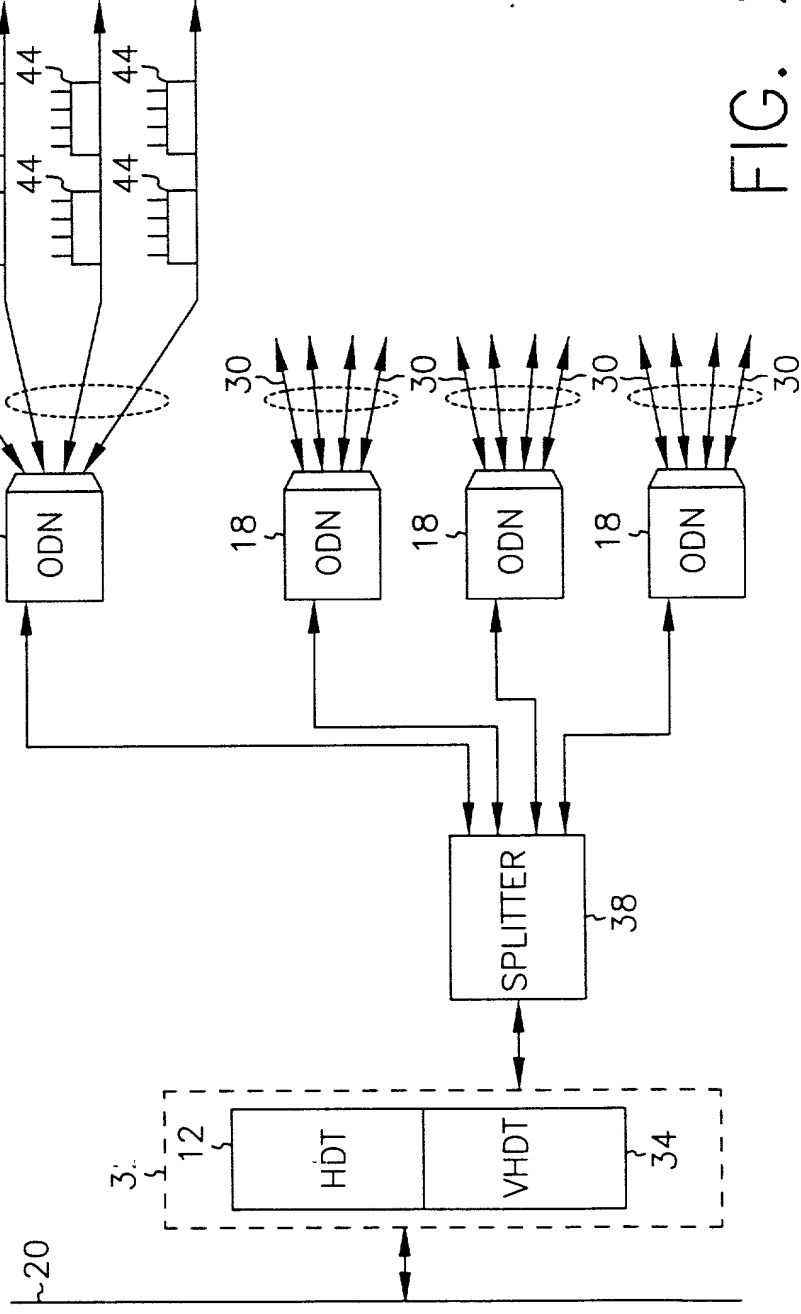


FIG. 1



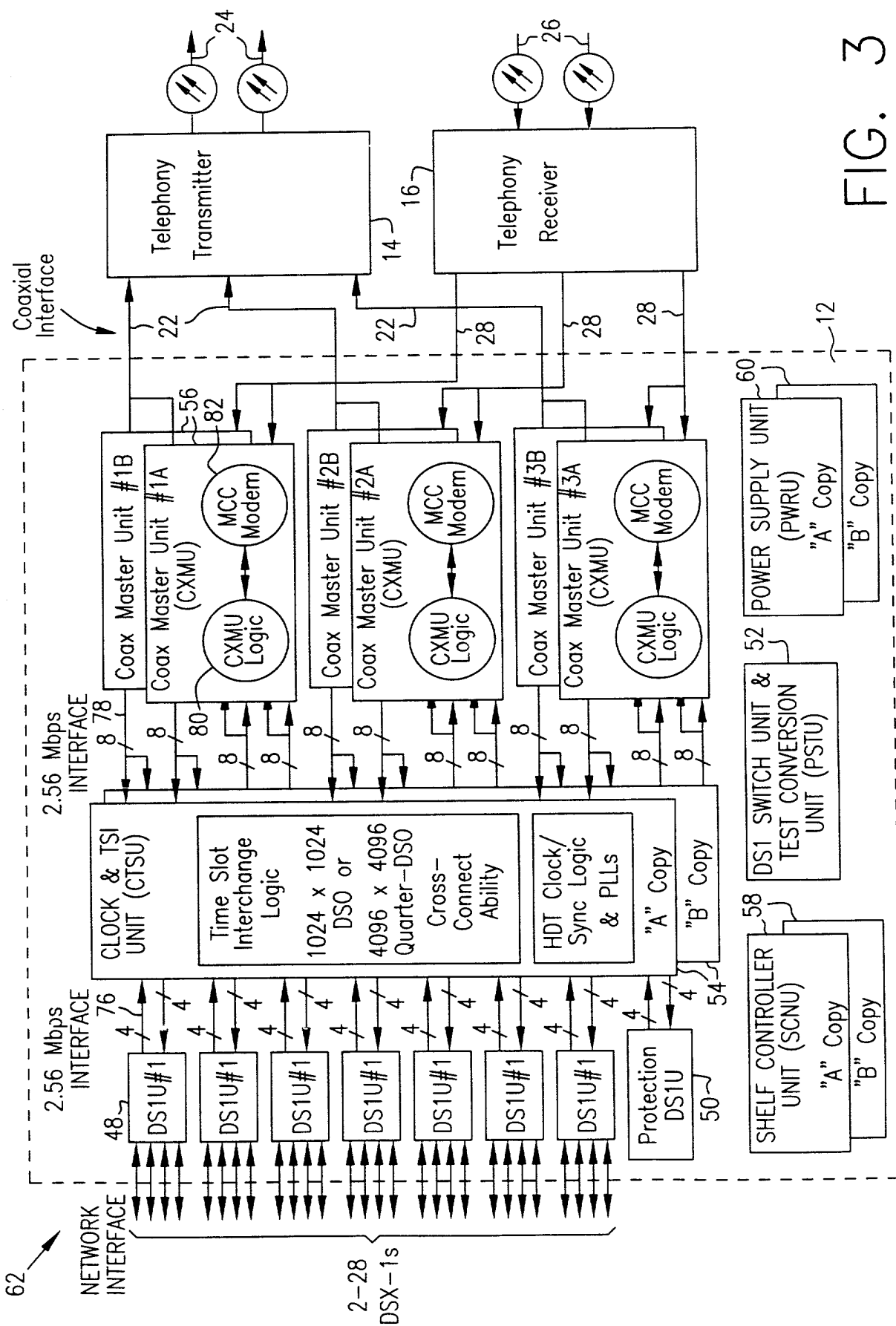


FIG. 3

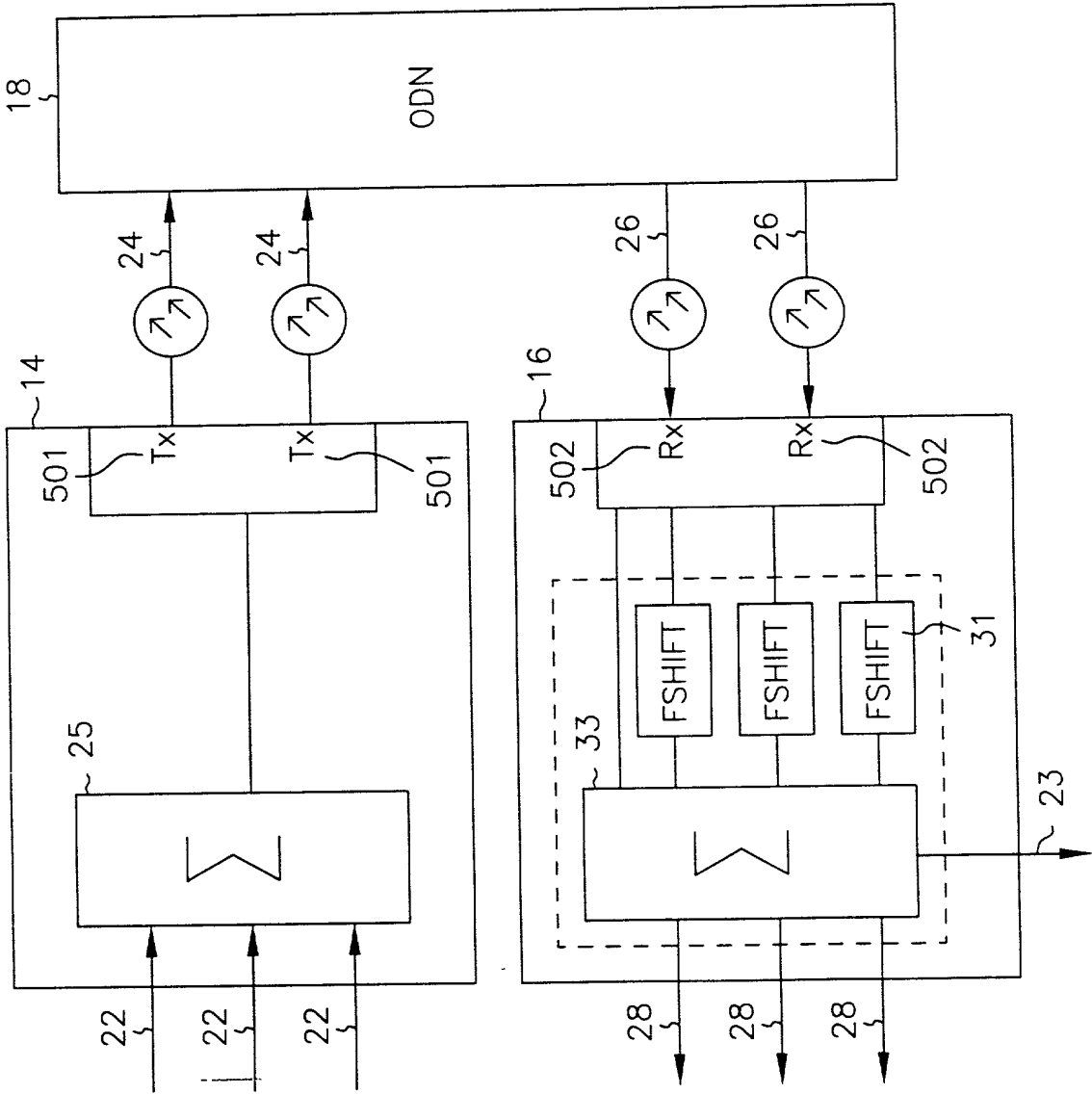


FIG. 4

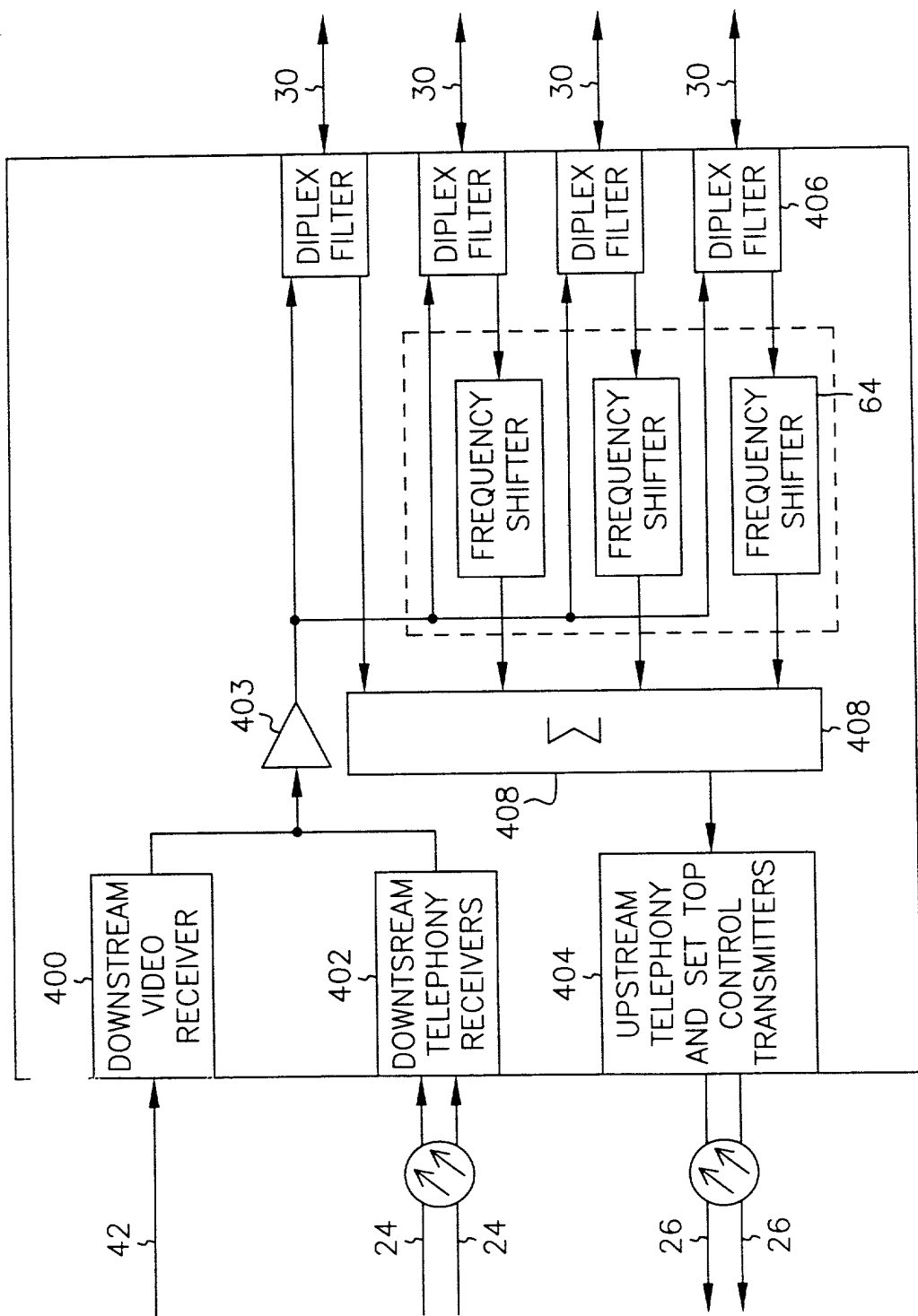


FIG. 5

FIG. 6

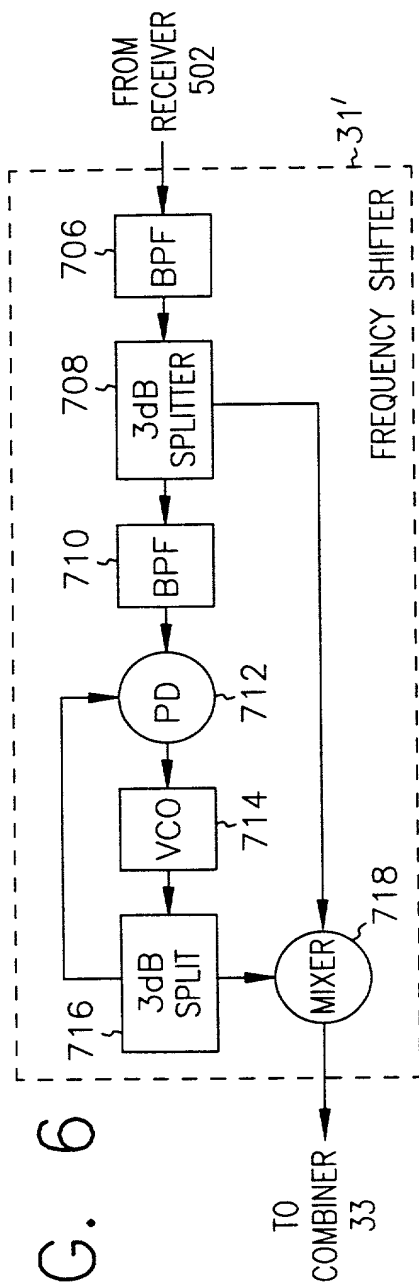
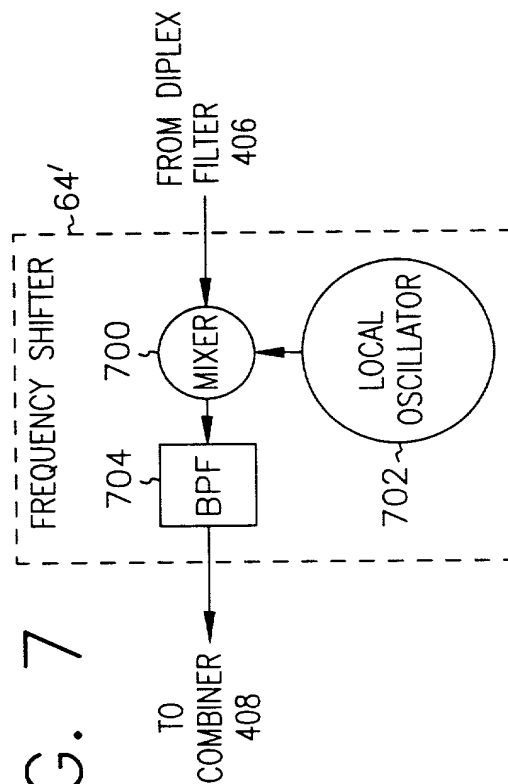


FIG. 7



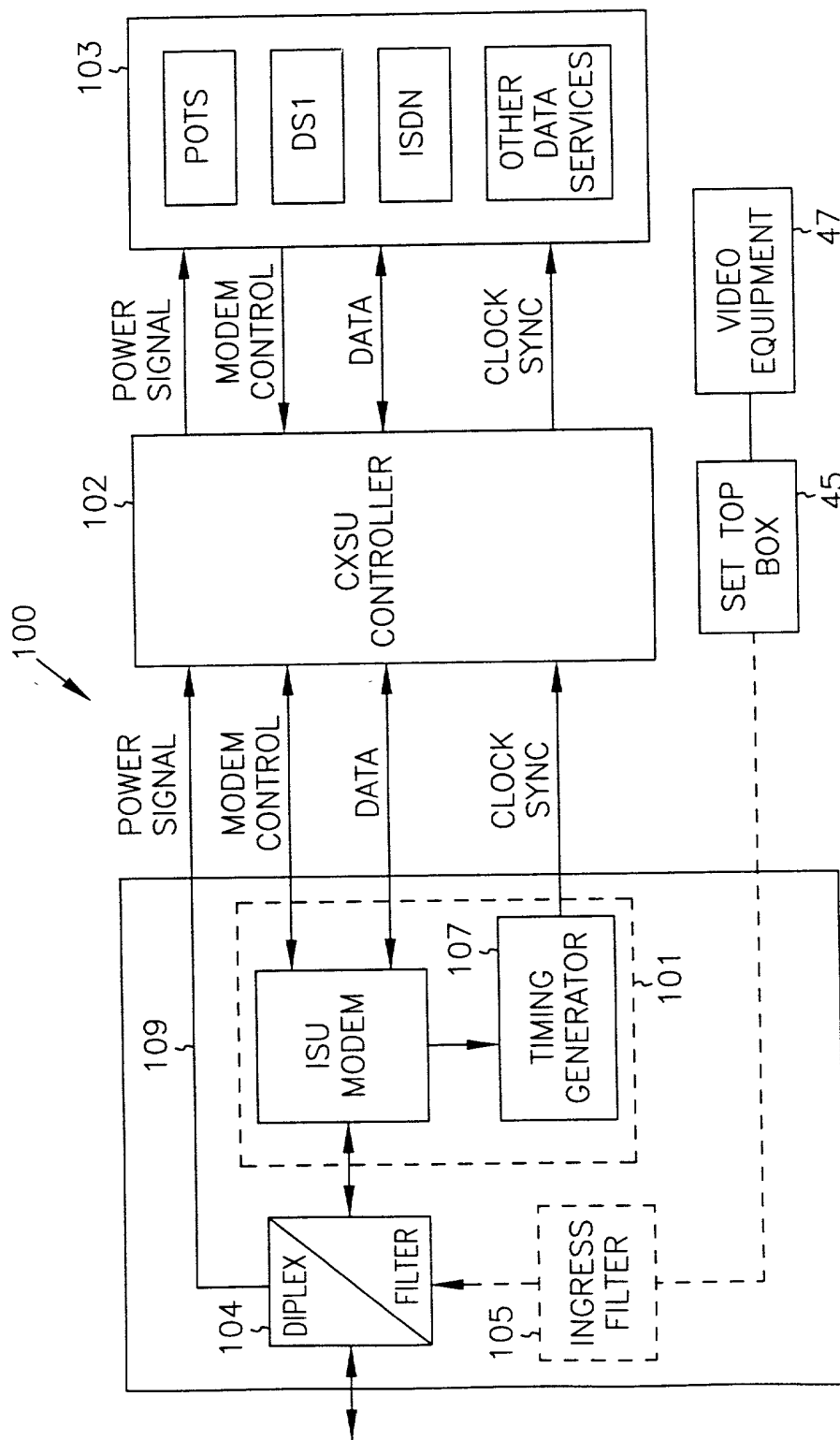


FIG. 8

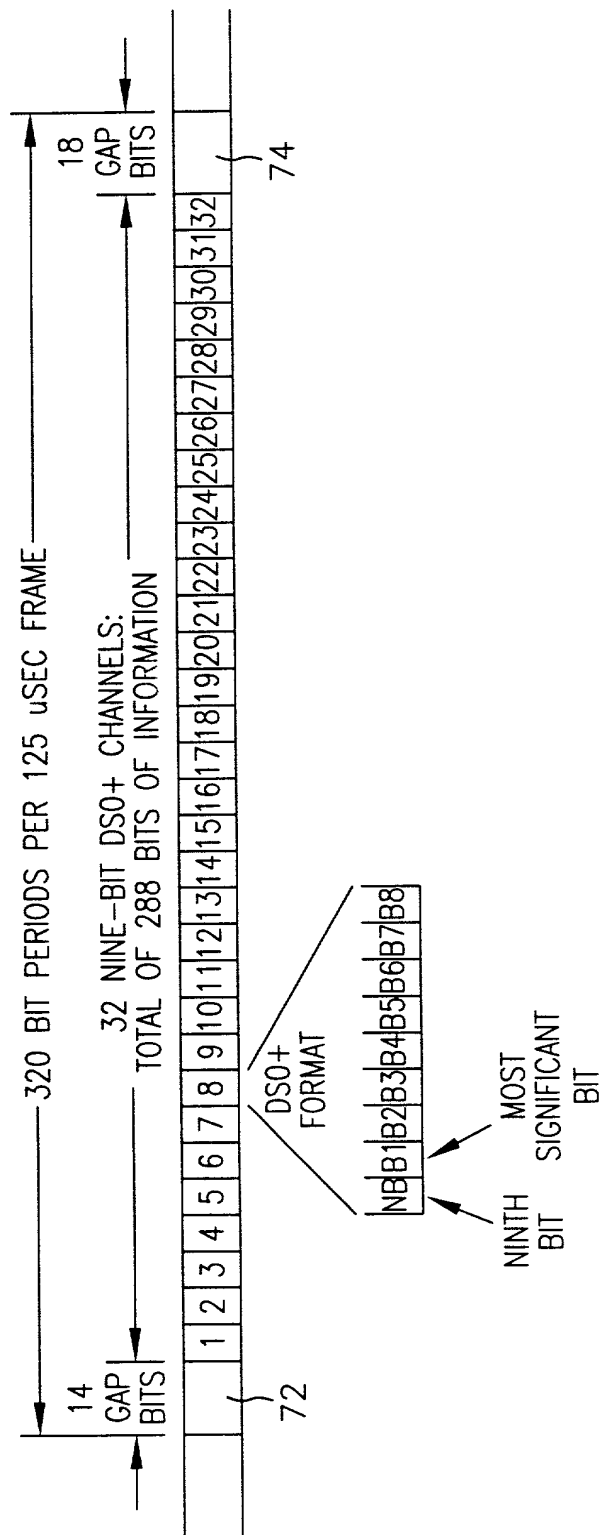


FIG. 9

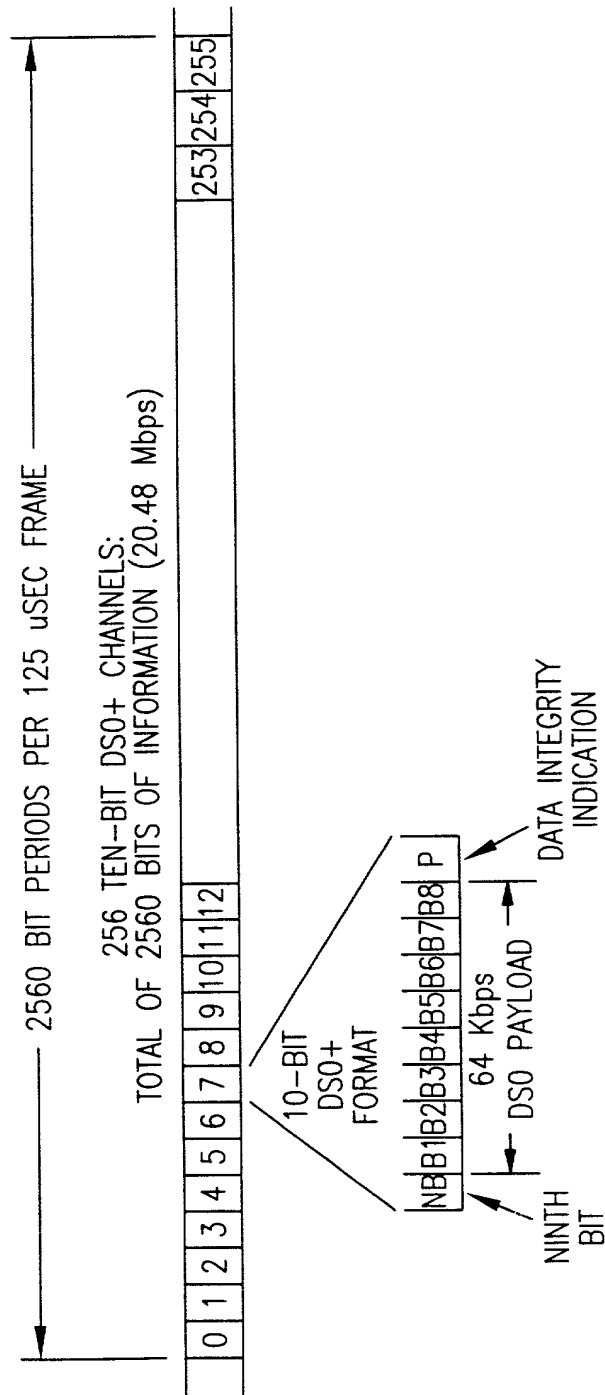


FIG. 10

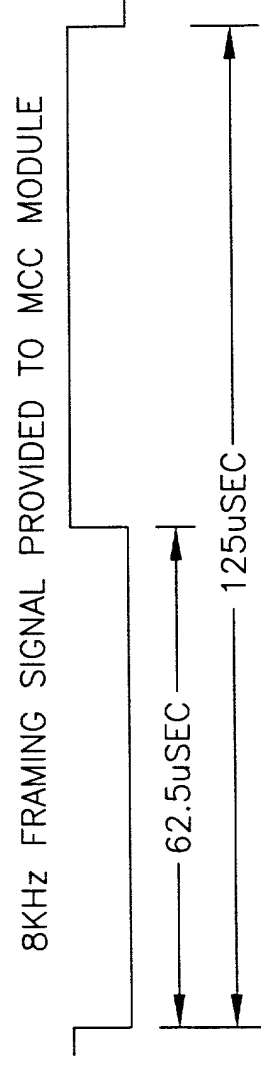


FIG. 11

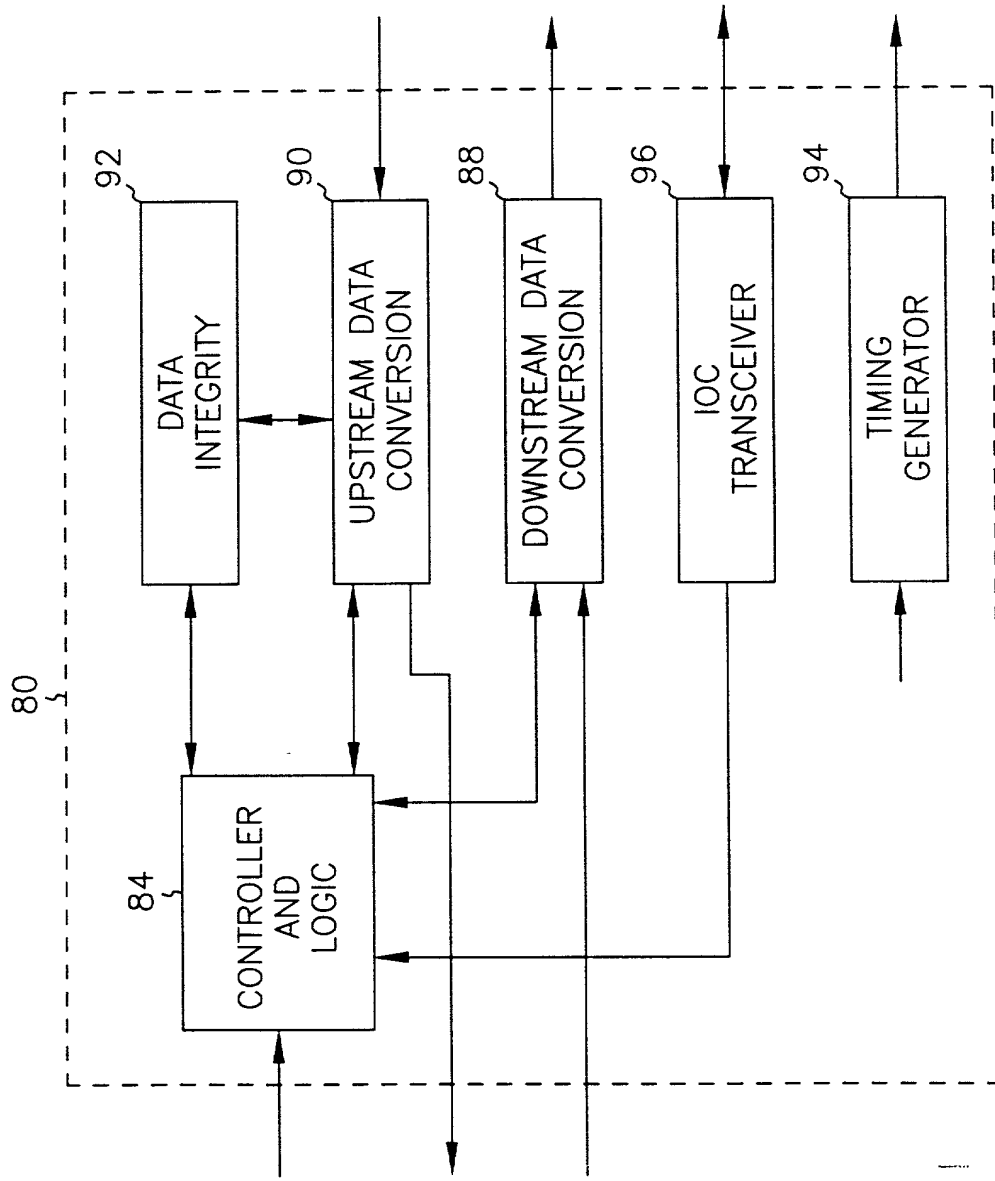


FIG. 12

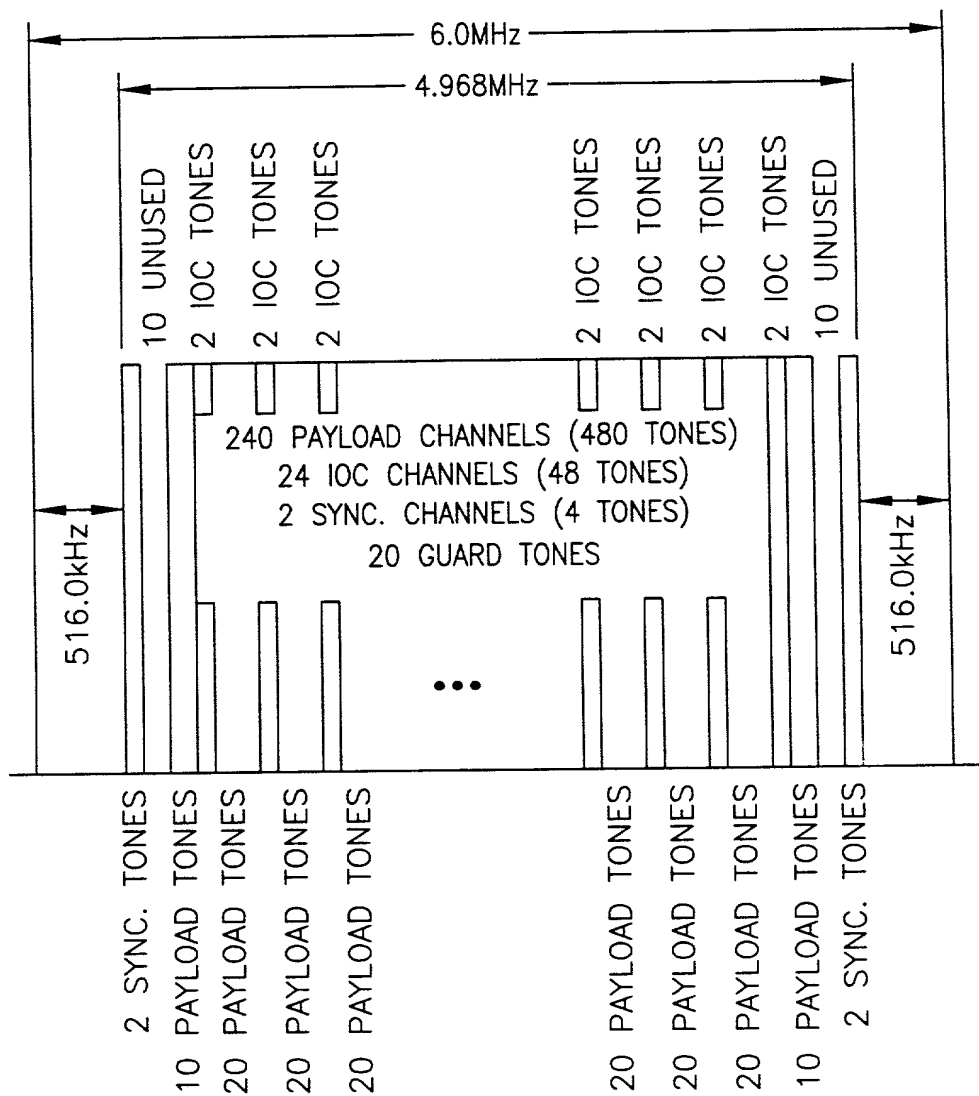


FIG. 13

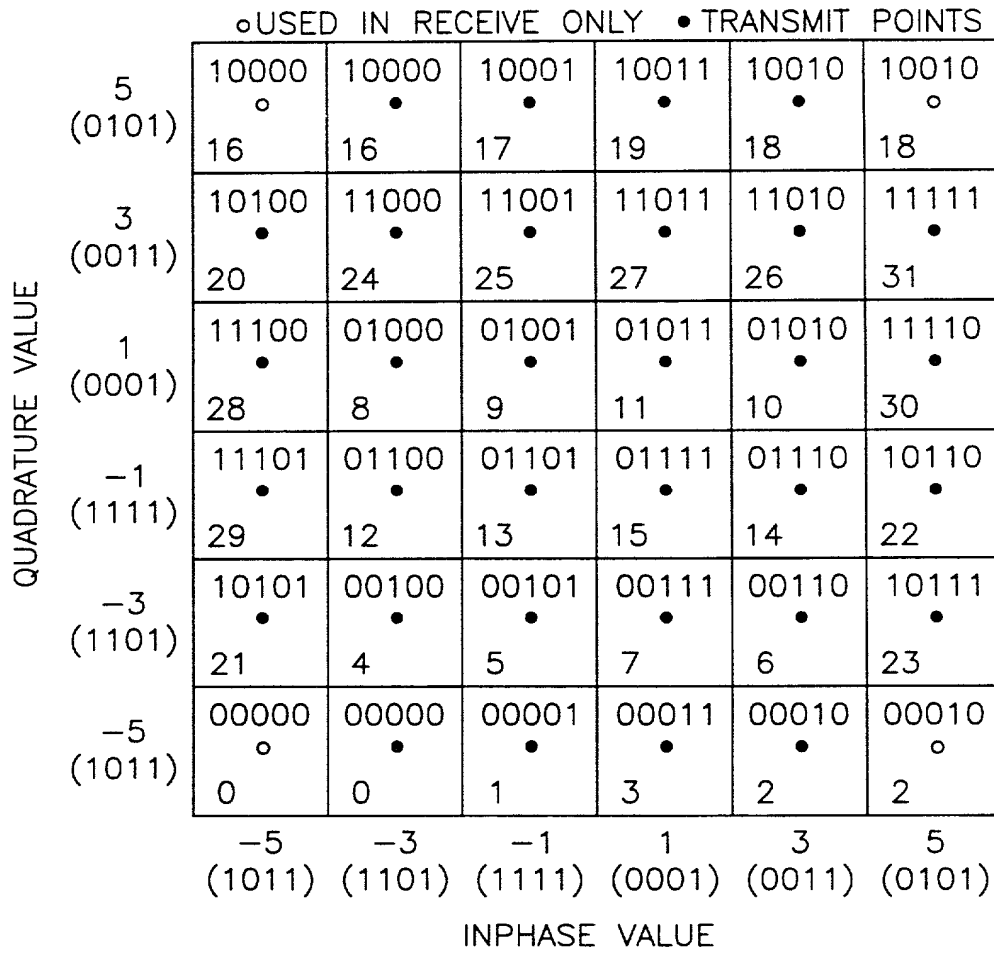


FIG. 14

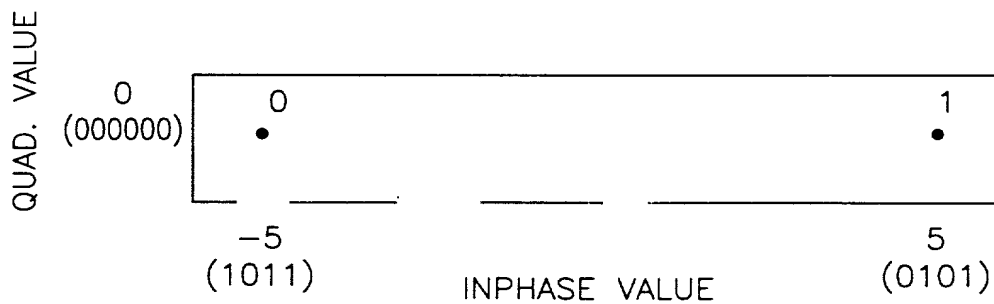


FIG. 15

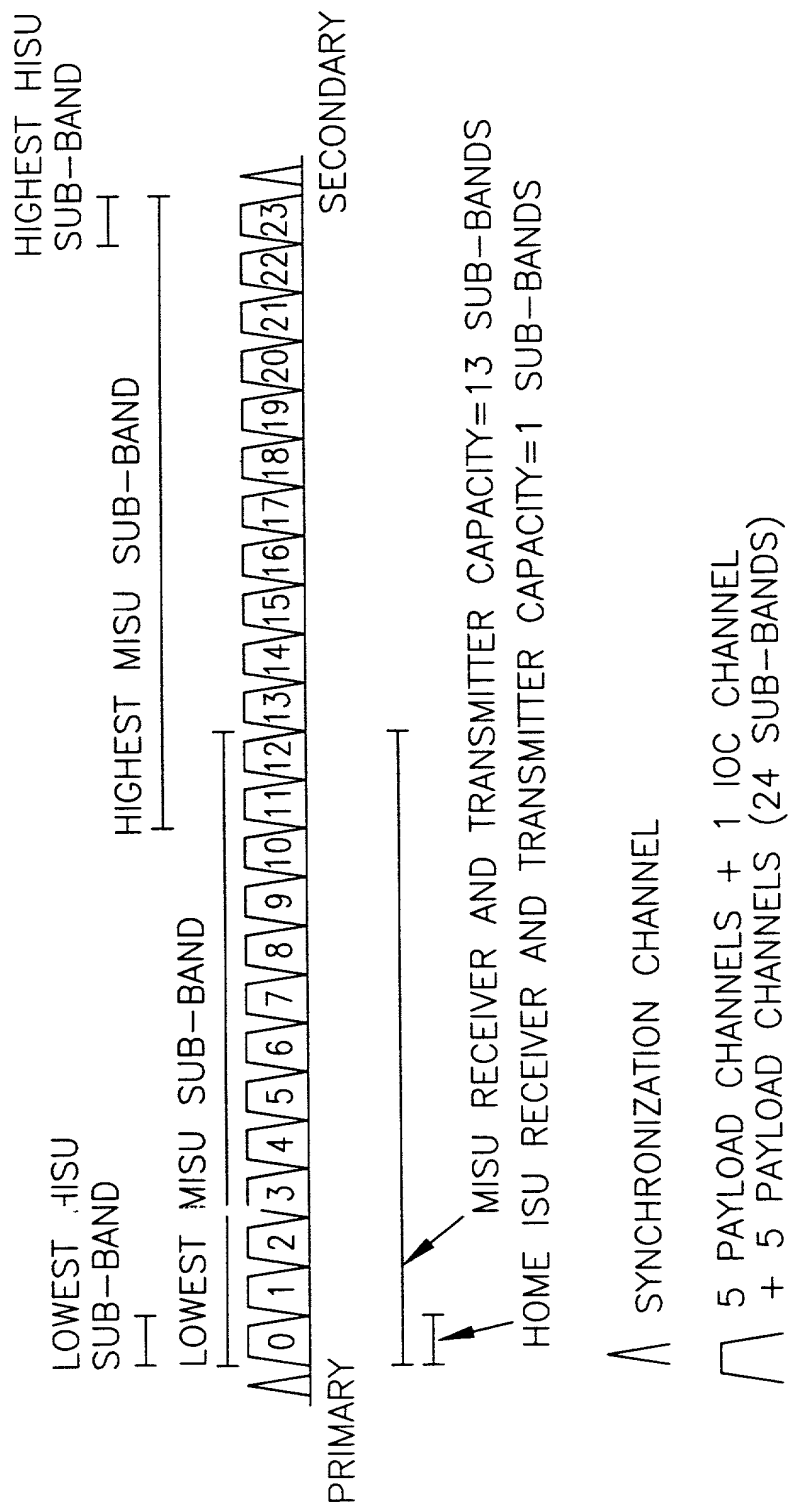


FIG. 16

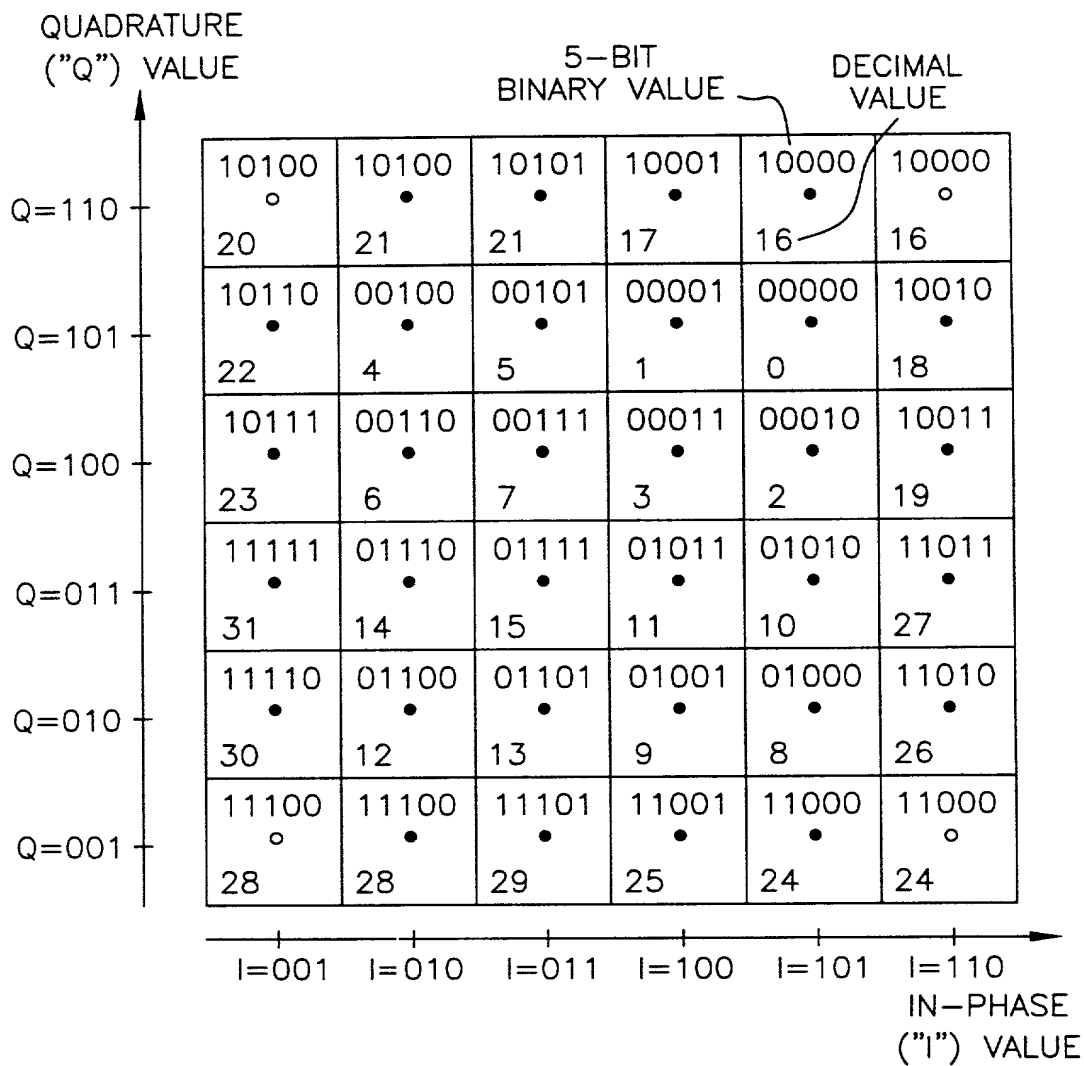


FIG. 17

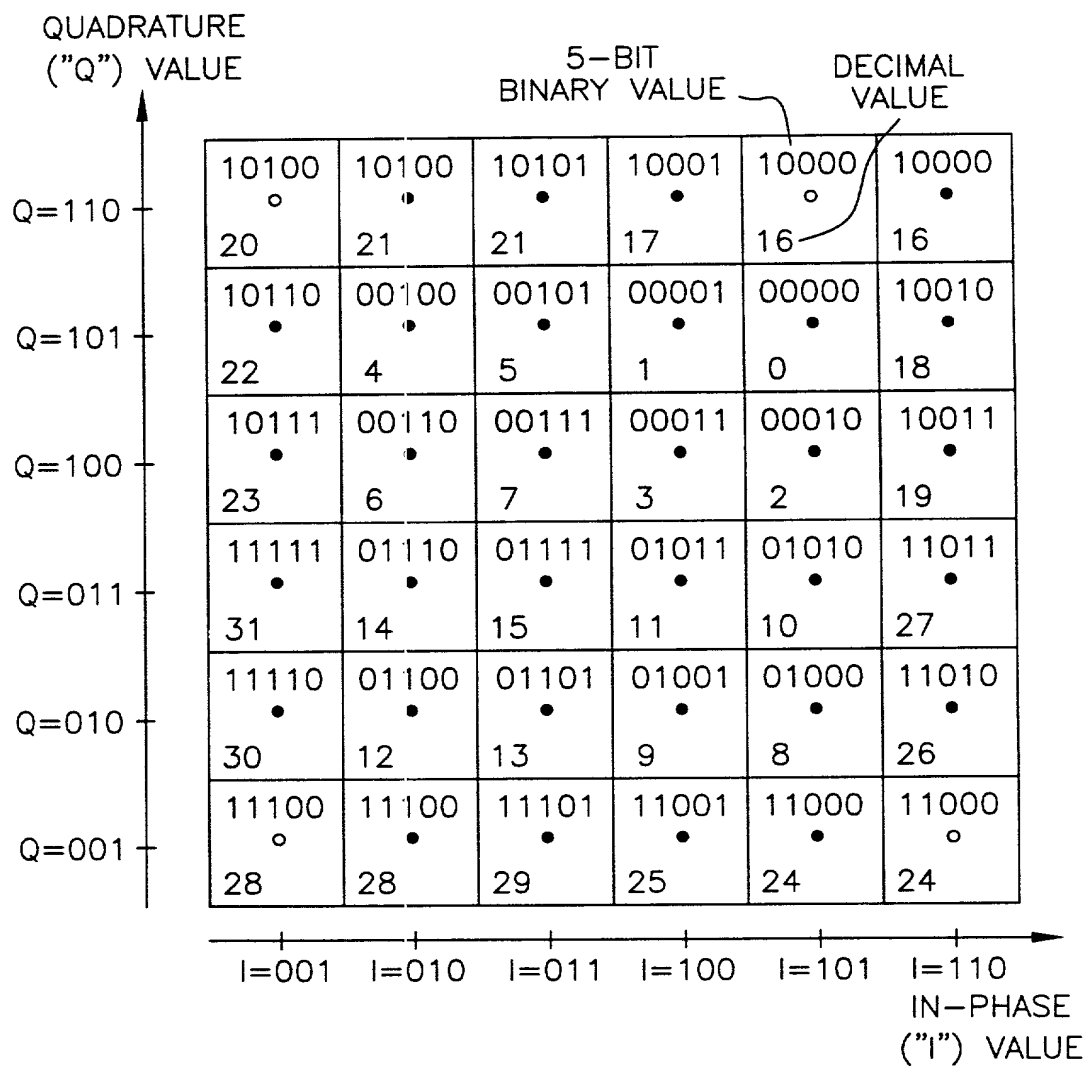


FIG. 18

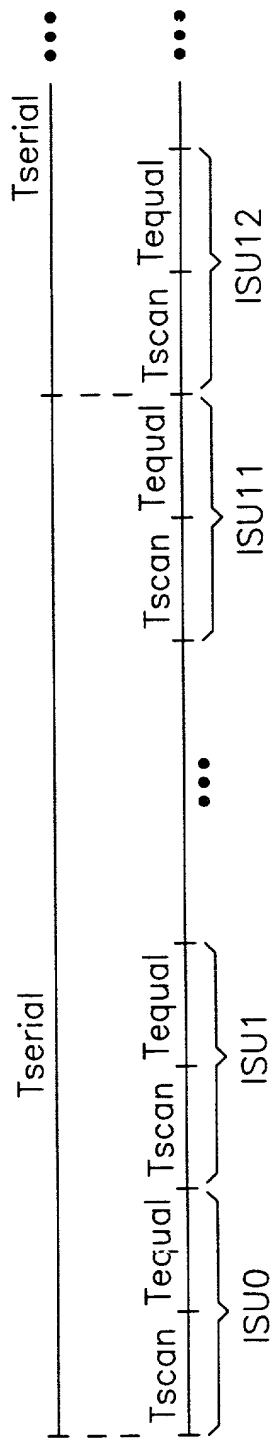


FIG. 19

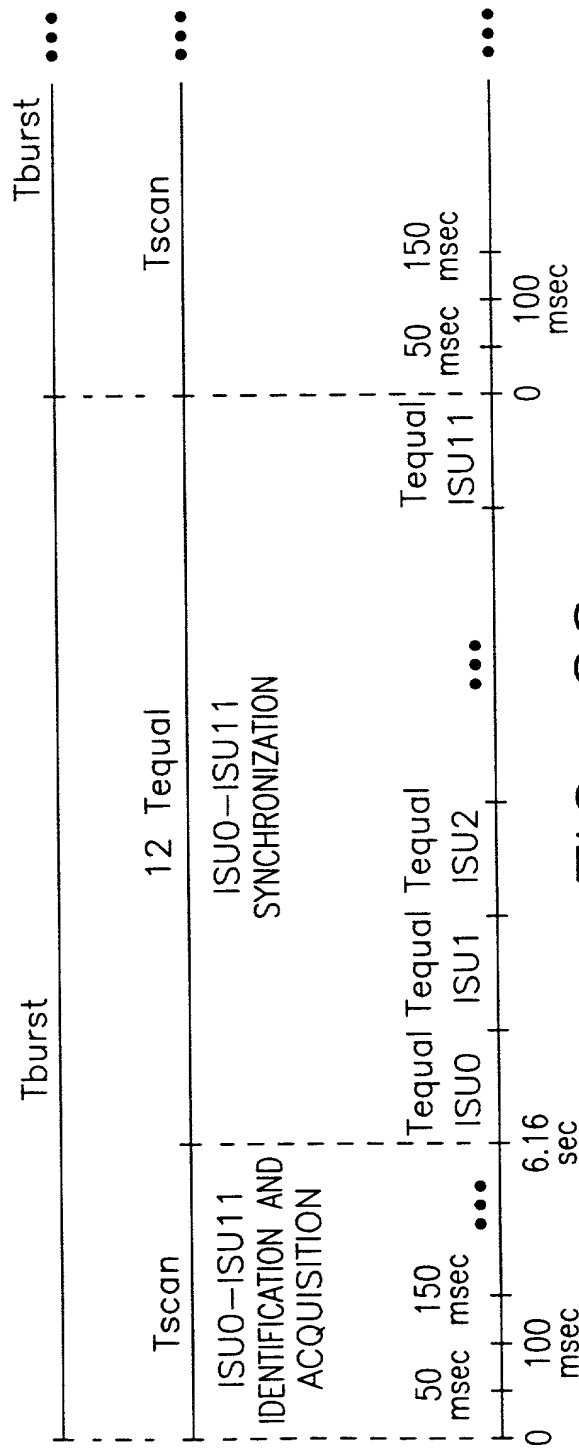


FIG. 20

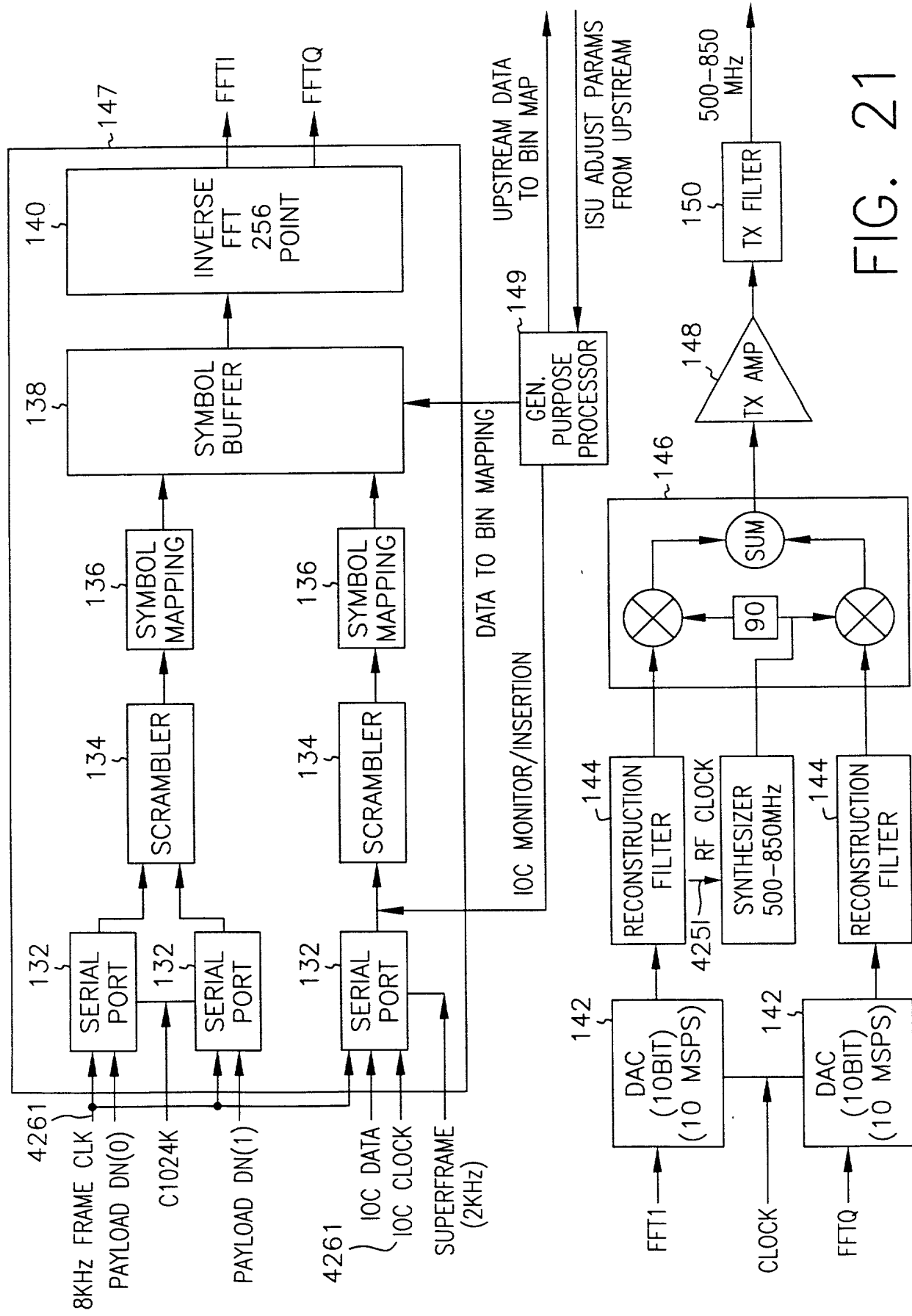


FIG. 21

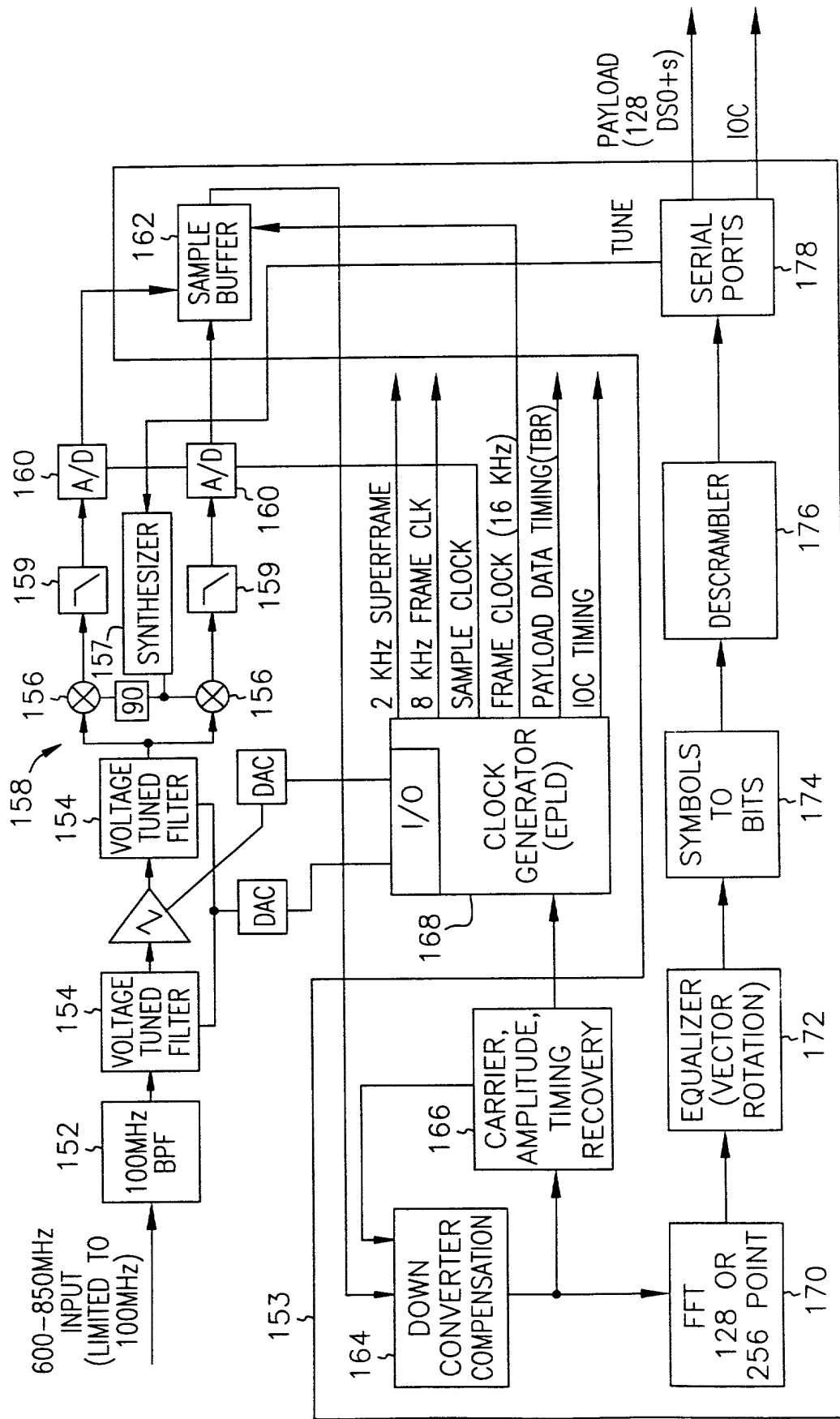


FIG. 22

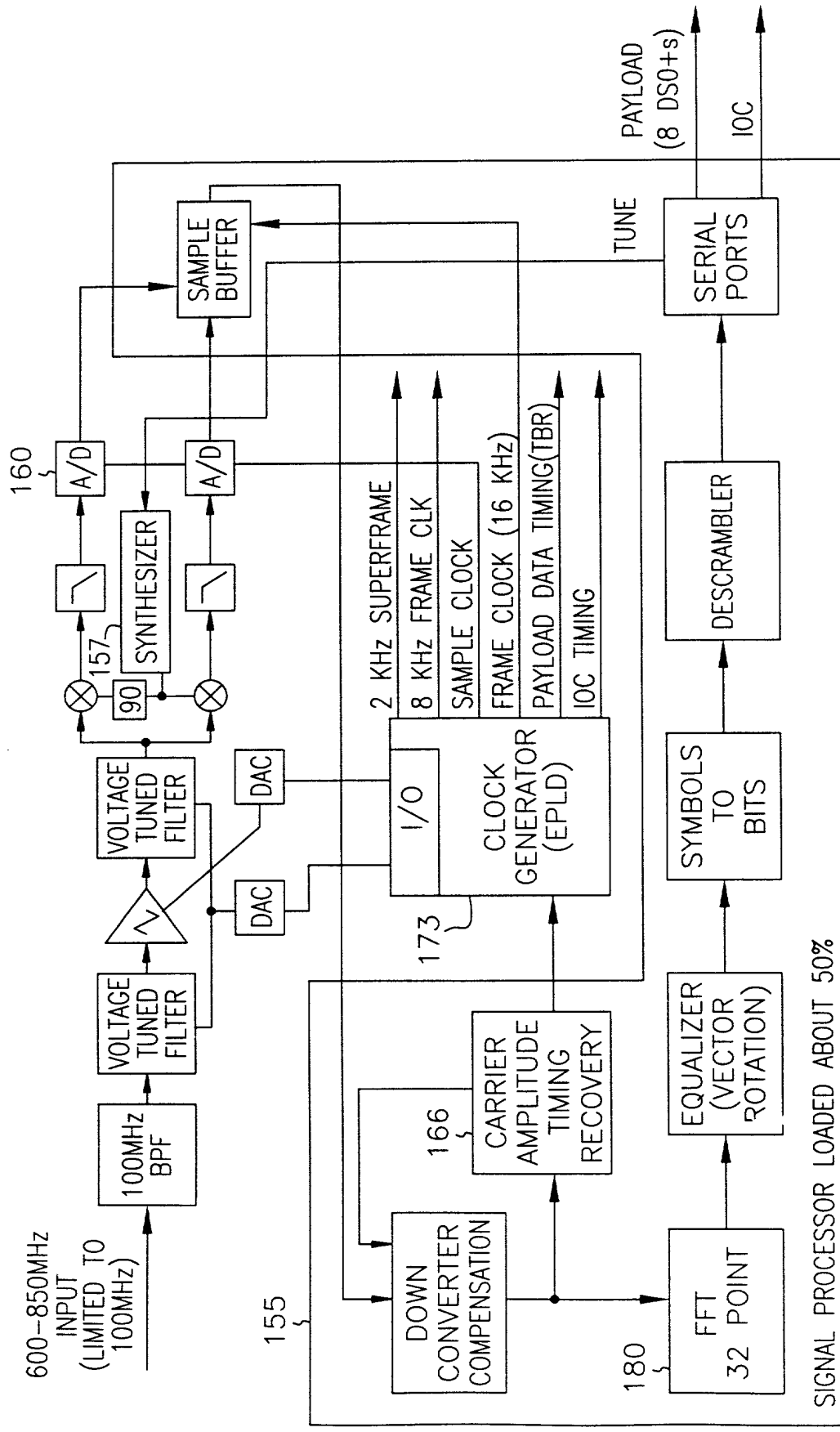


FIG. 23

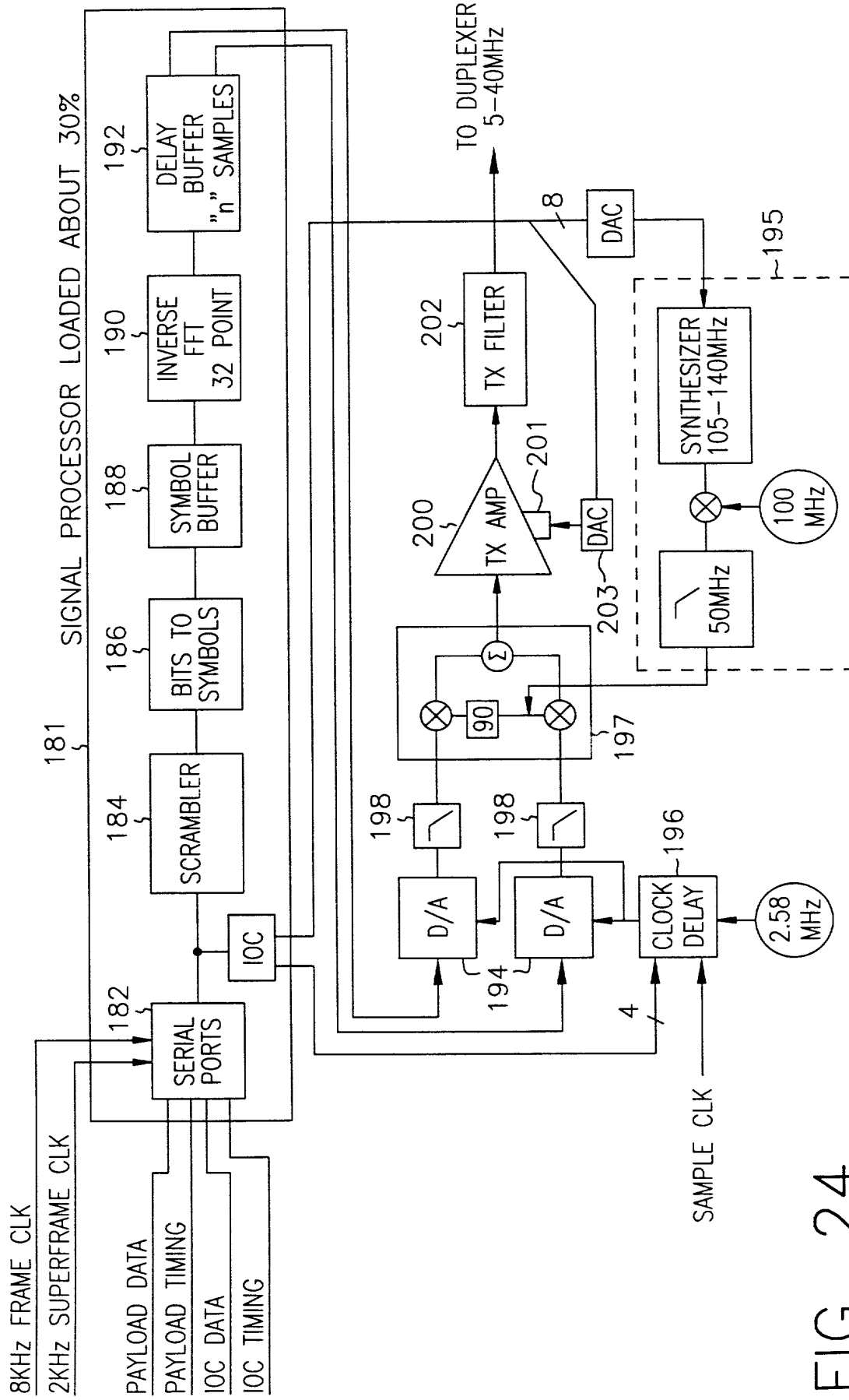
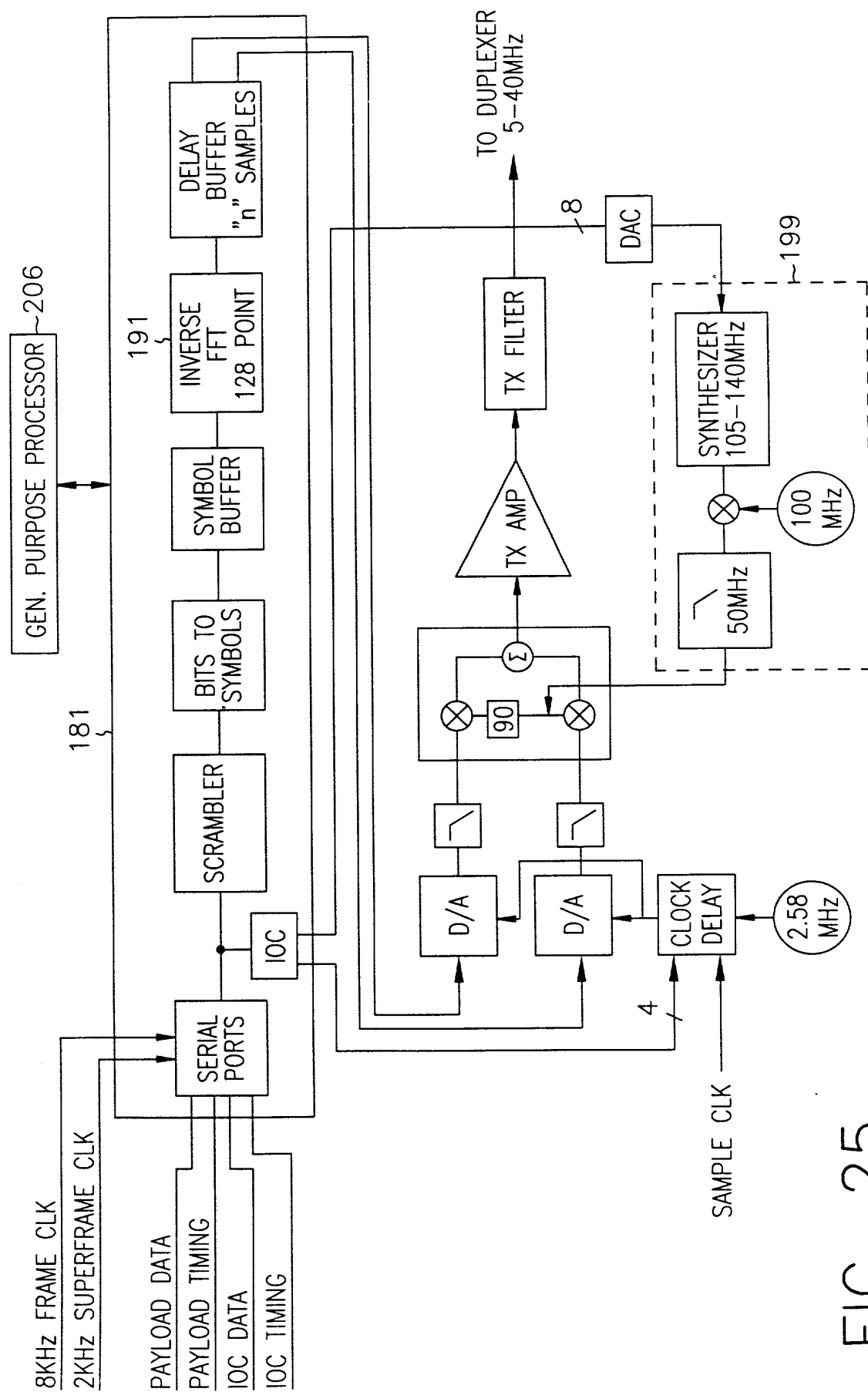


FIG. 24



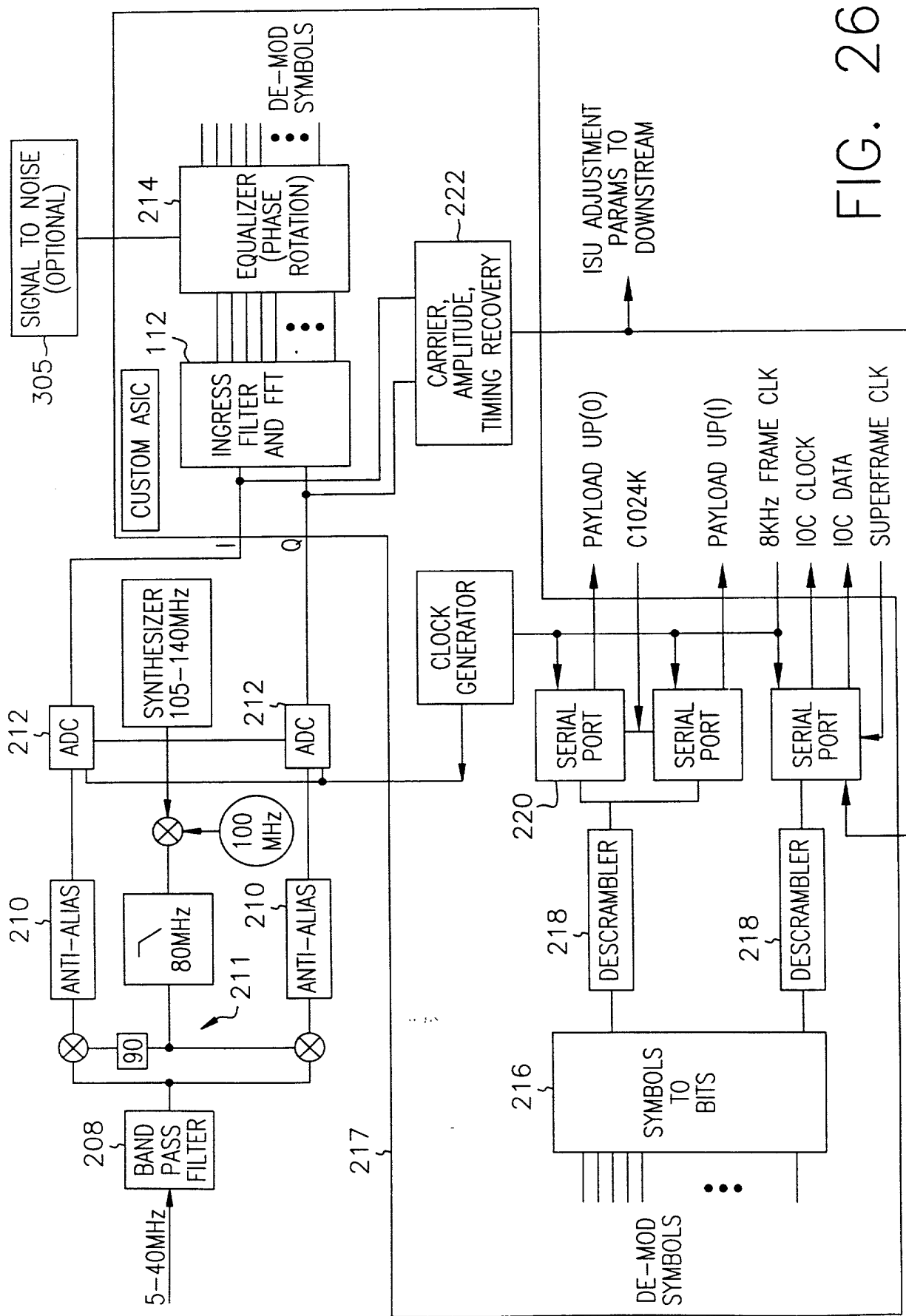


FIG. 26

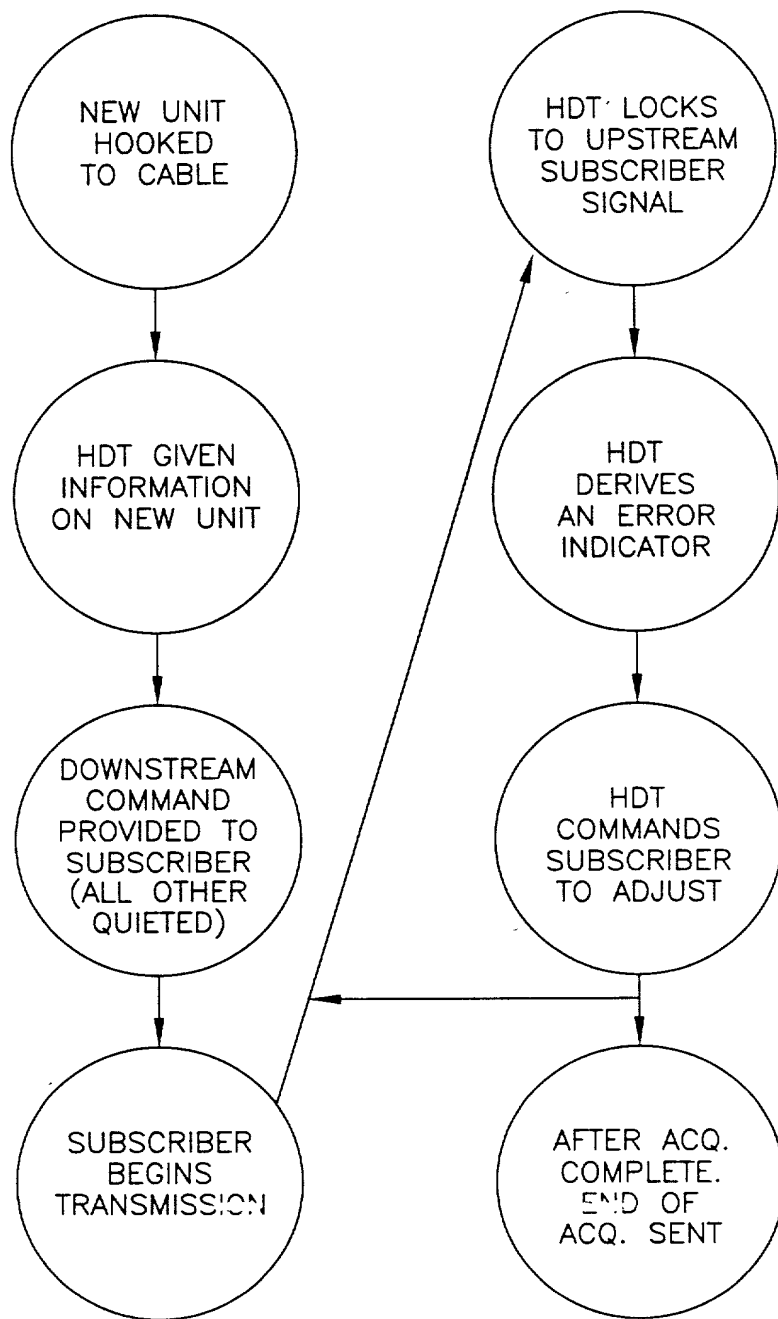


FIG. 27

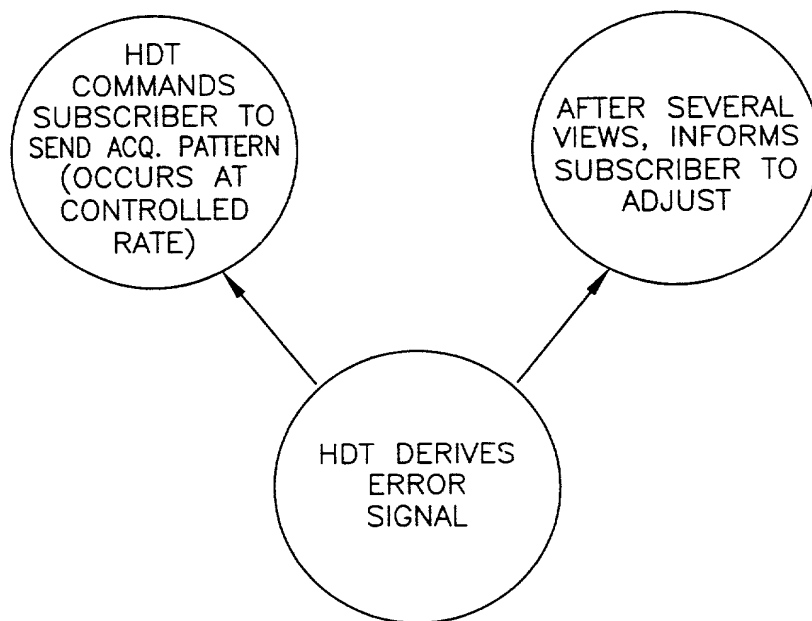


FIG. 28

Magnitude response of a single polyphase filter bank

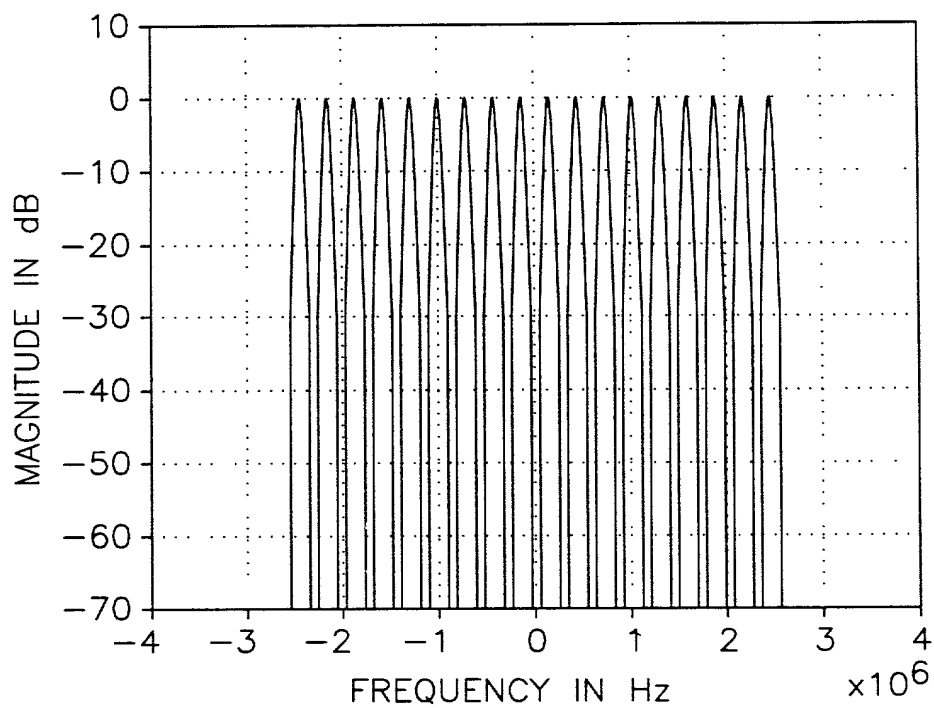


FIG. 29

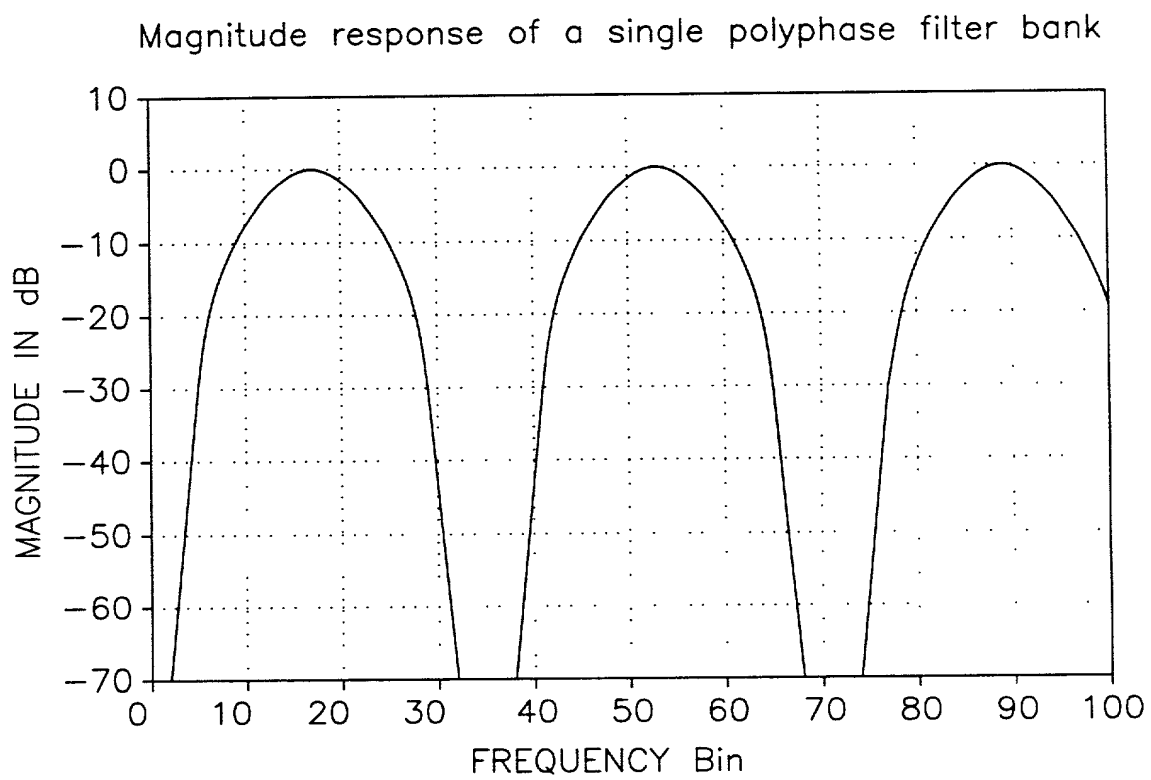


FIG. 30

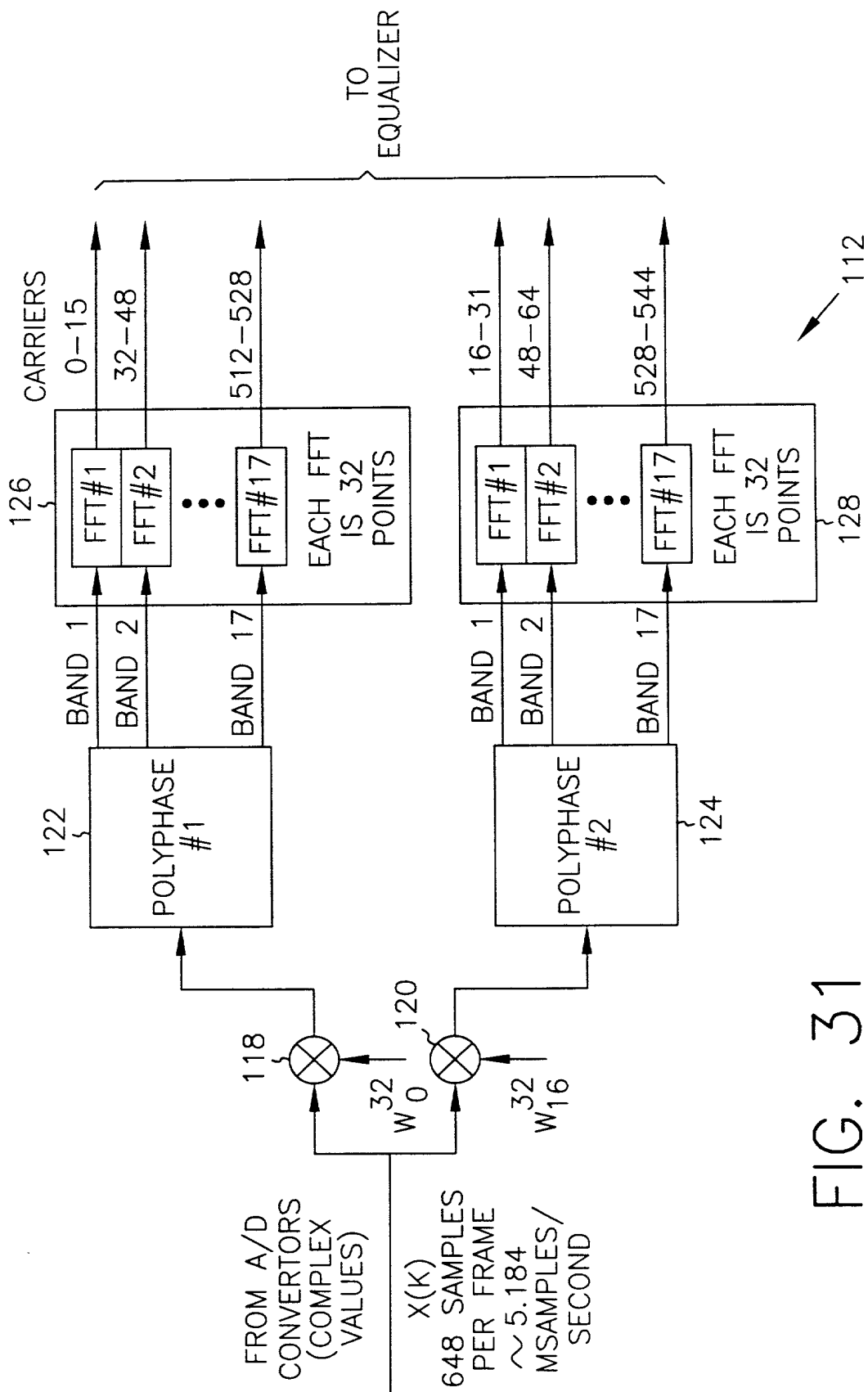


FIG. 31

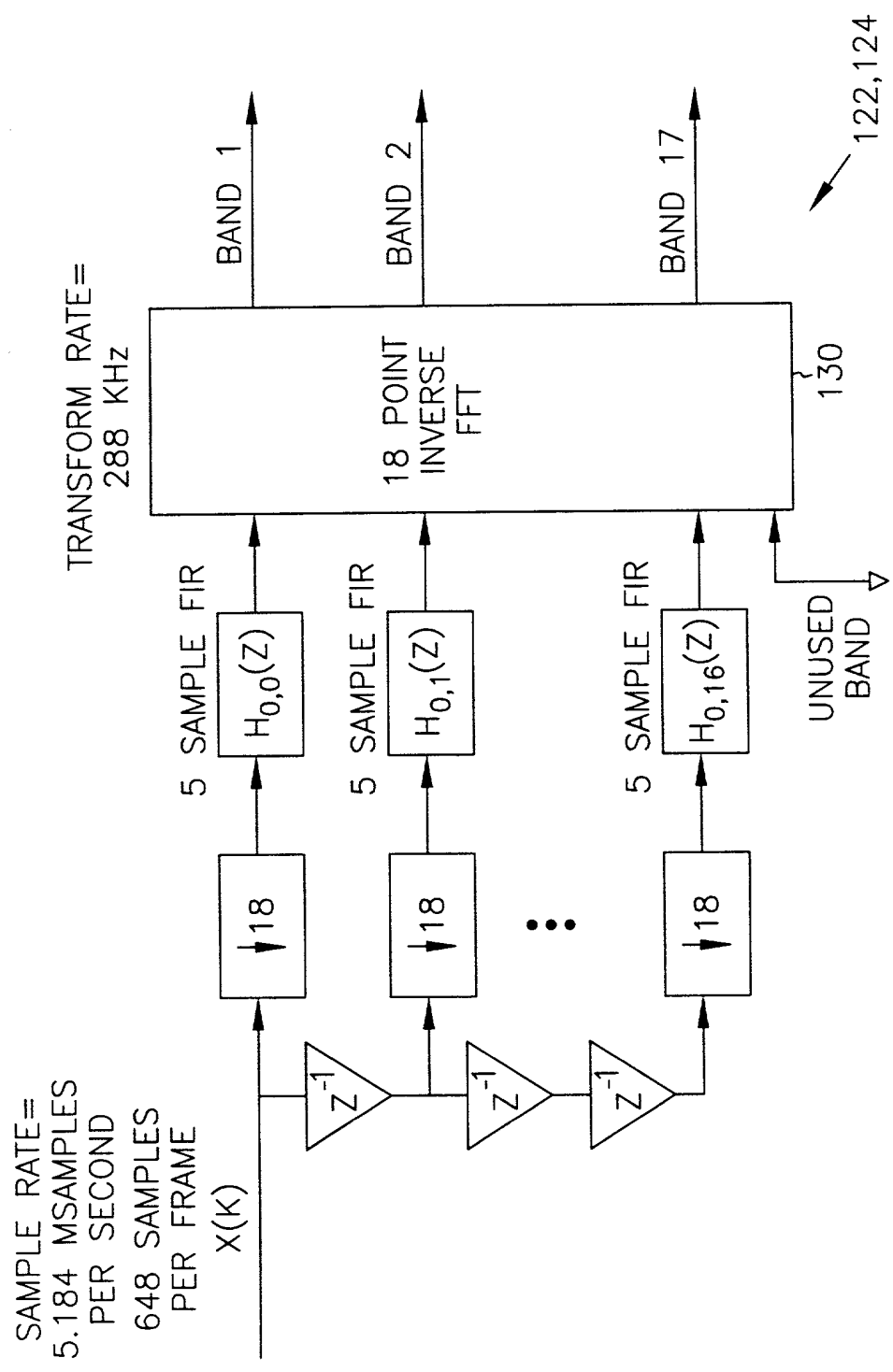


FIG. 32

FIG. 33

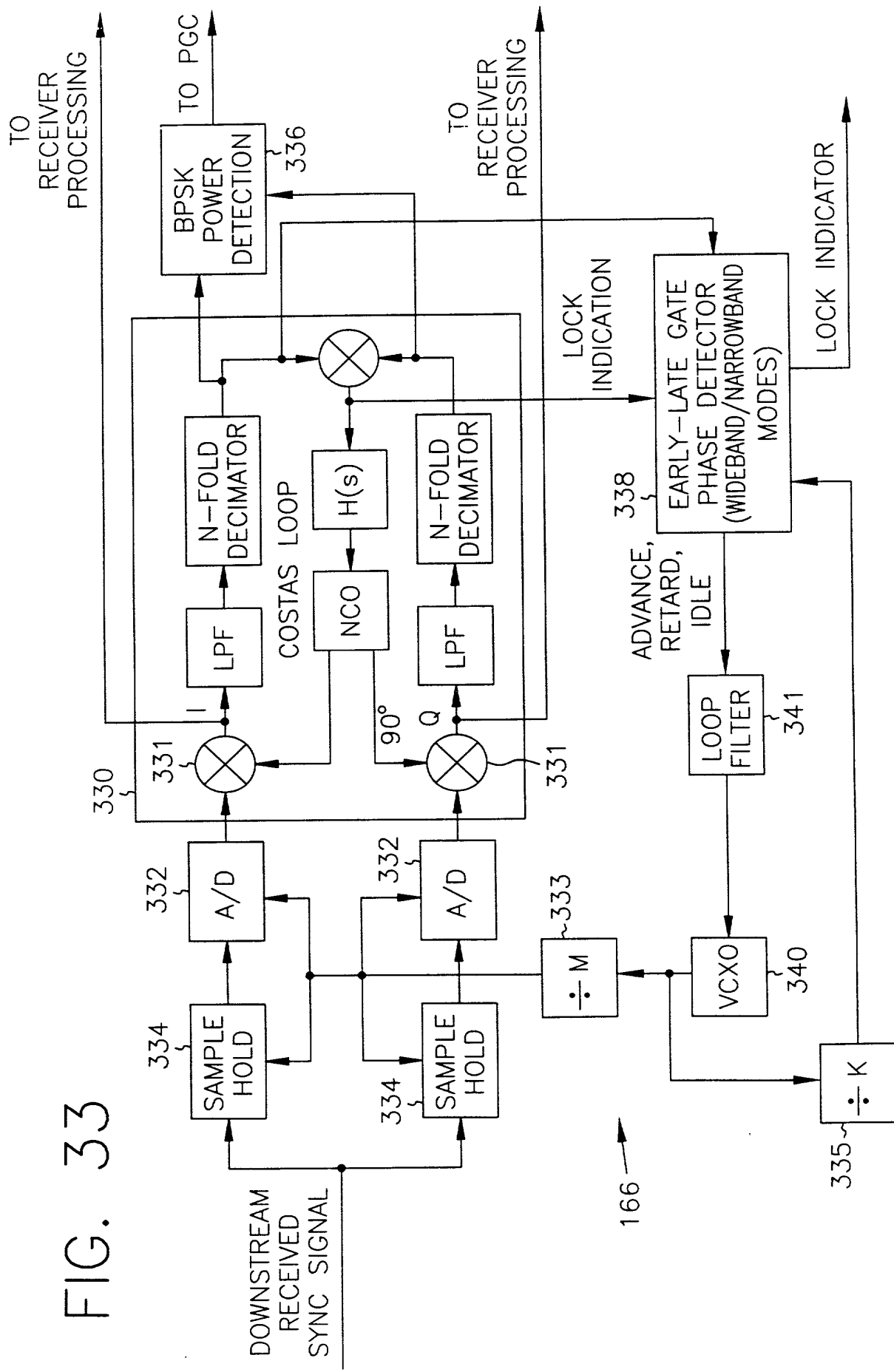
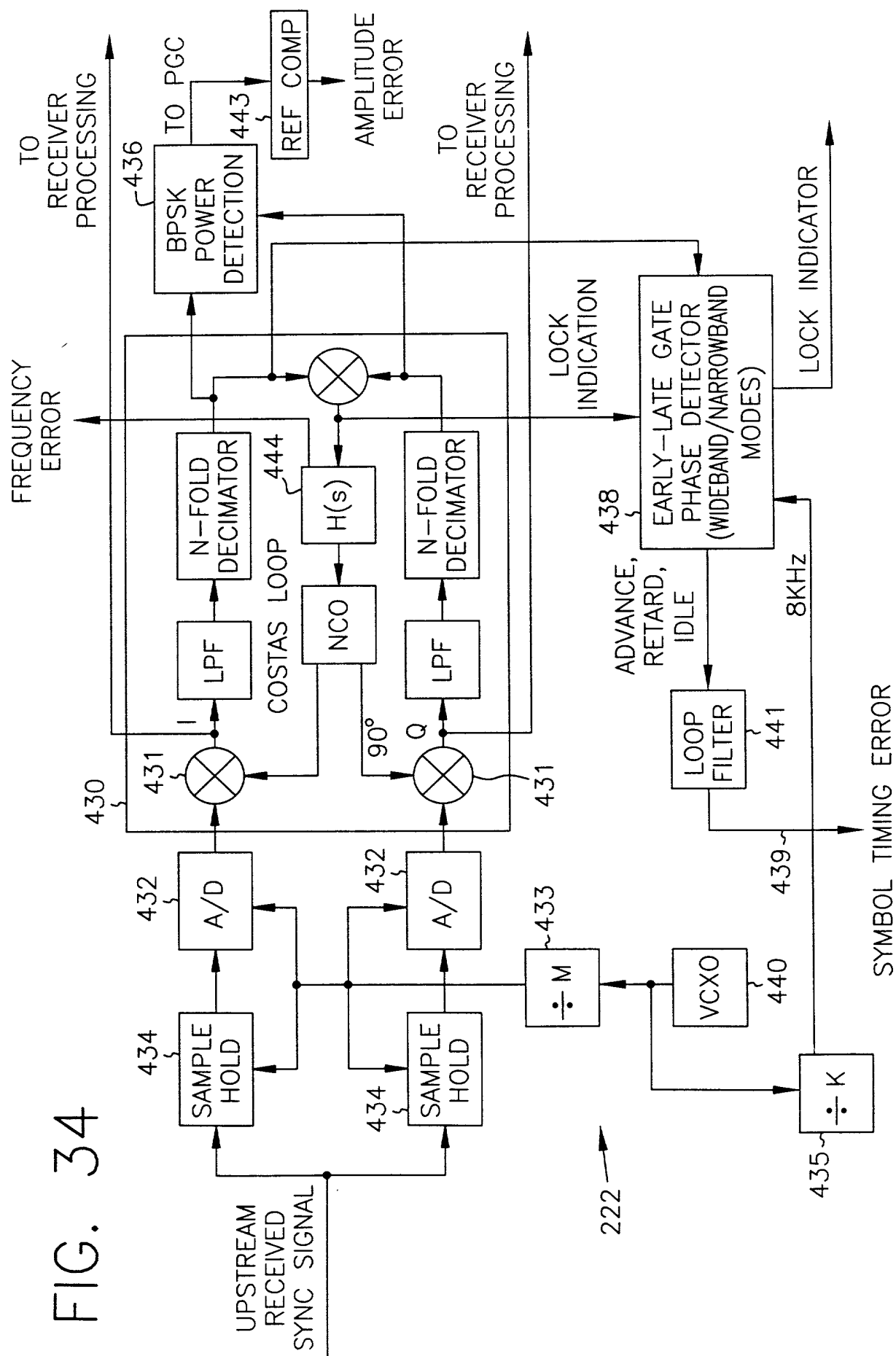


FIG. 34



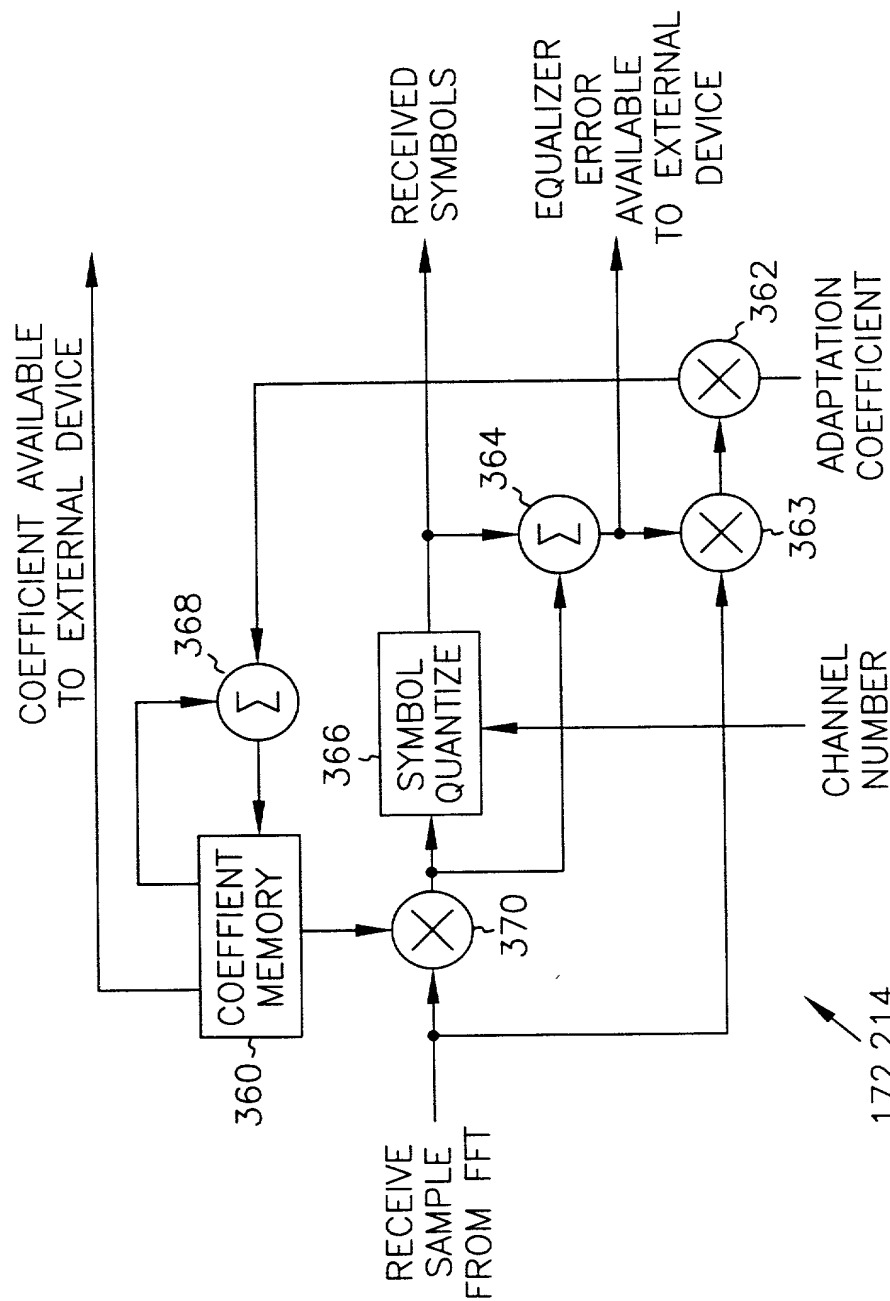


FIG. 35

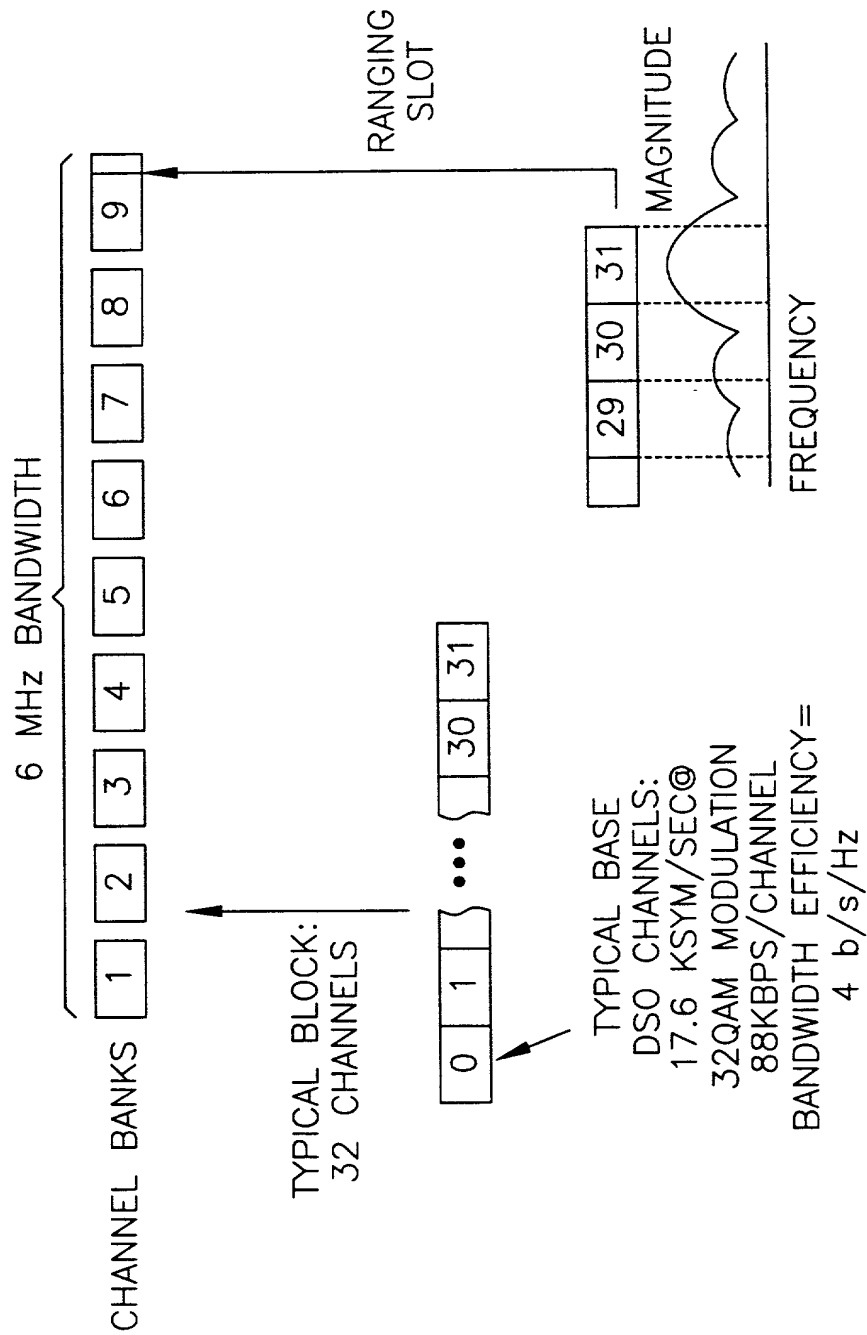
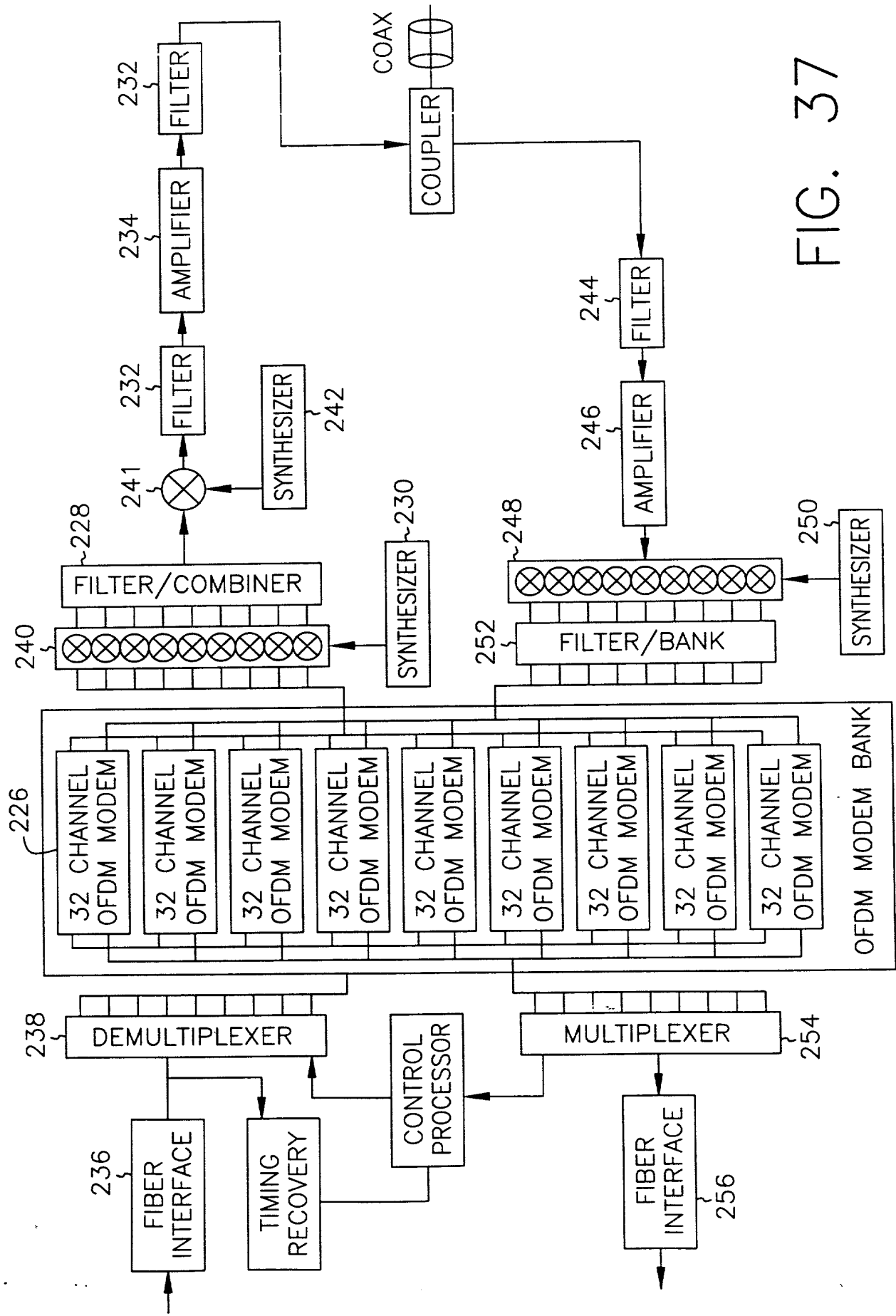


FIG. 36



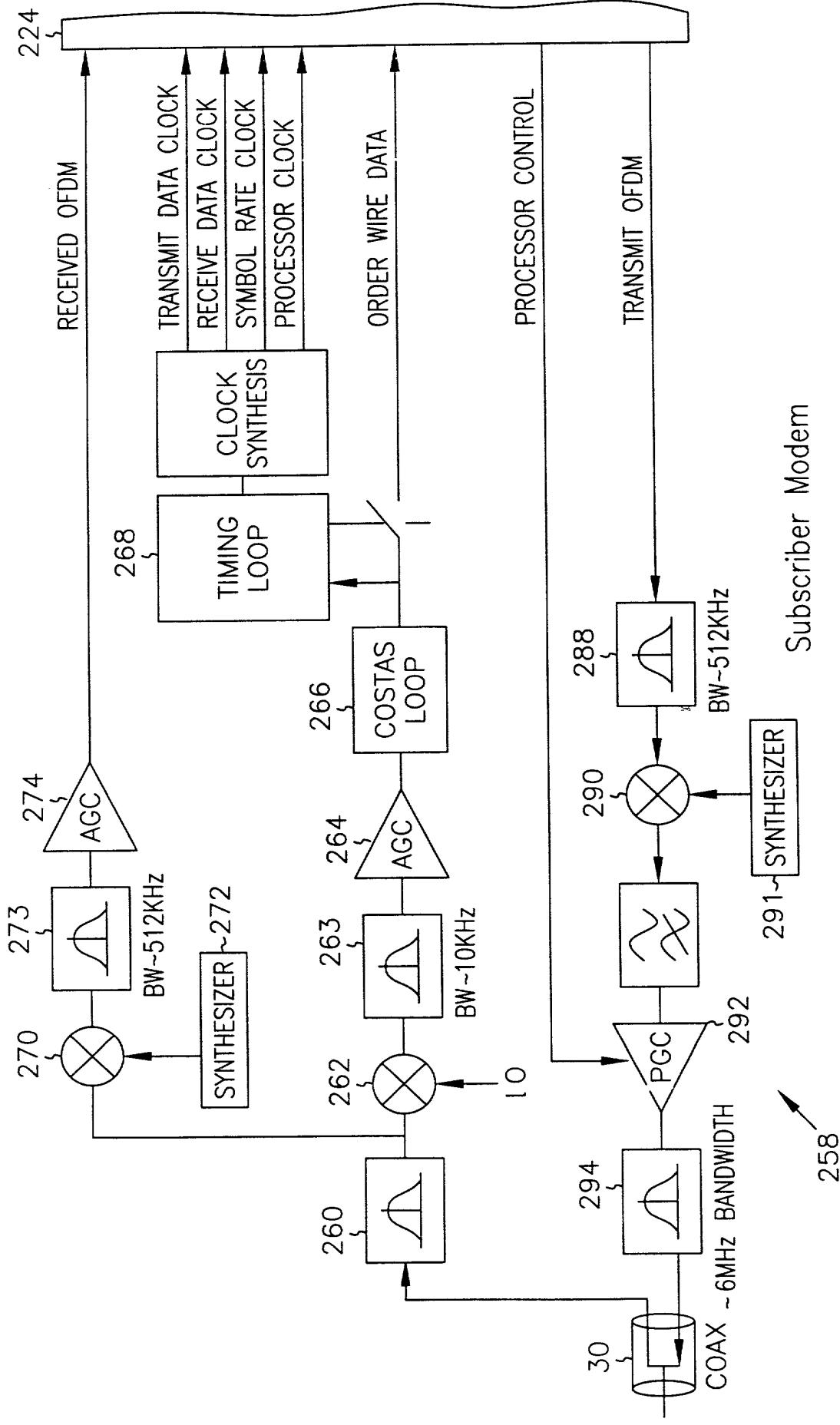


FIG. 38

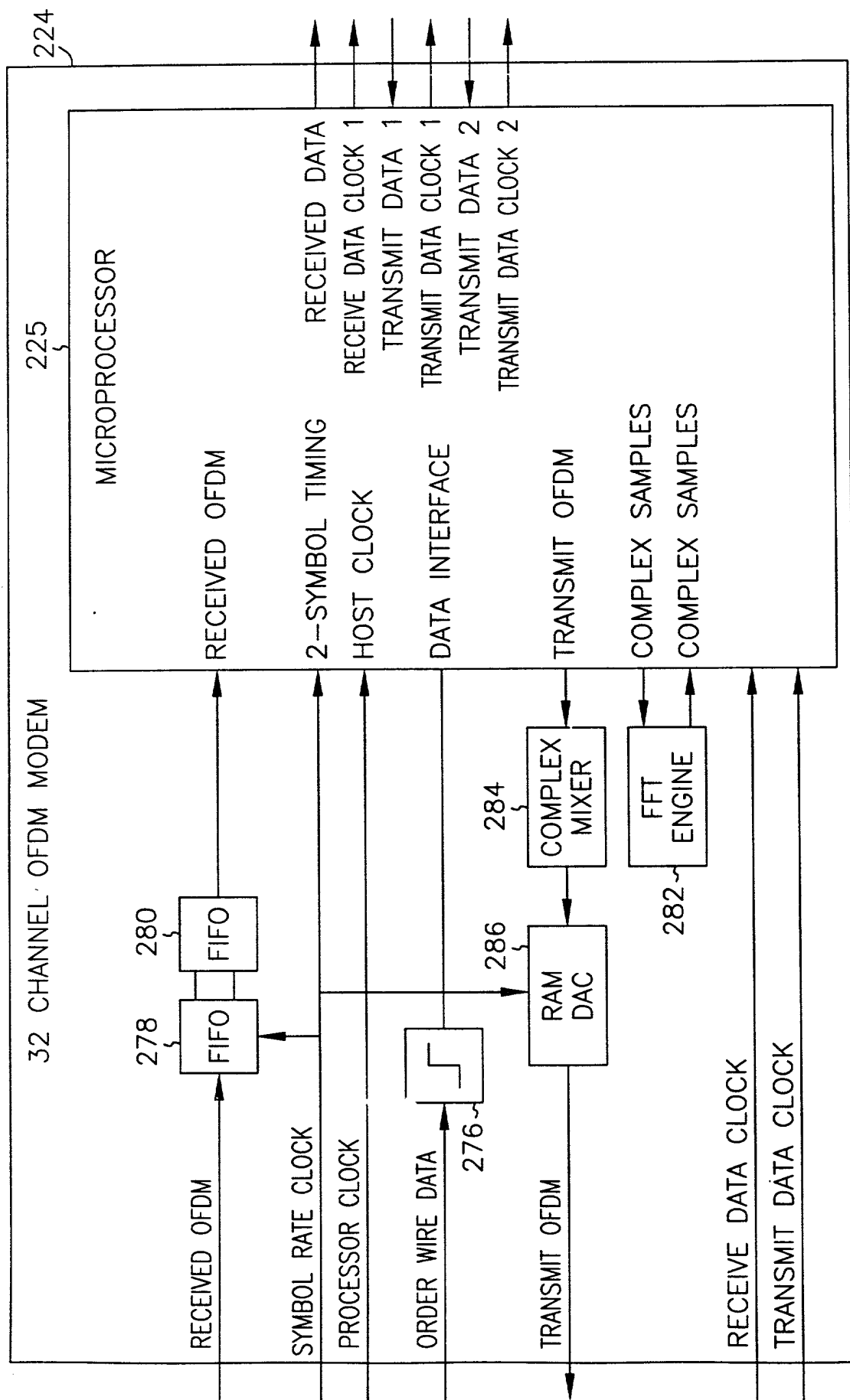


FIG. 39

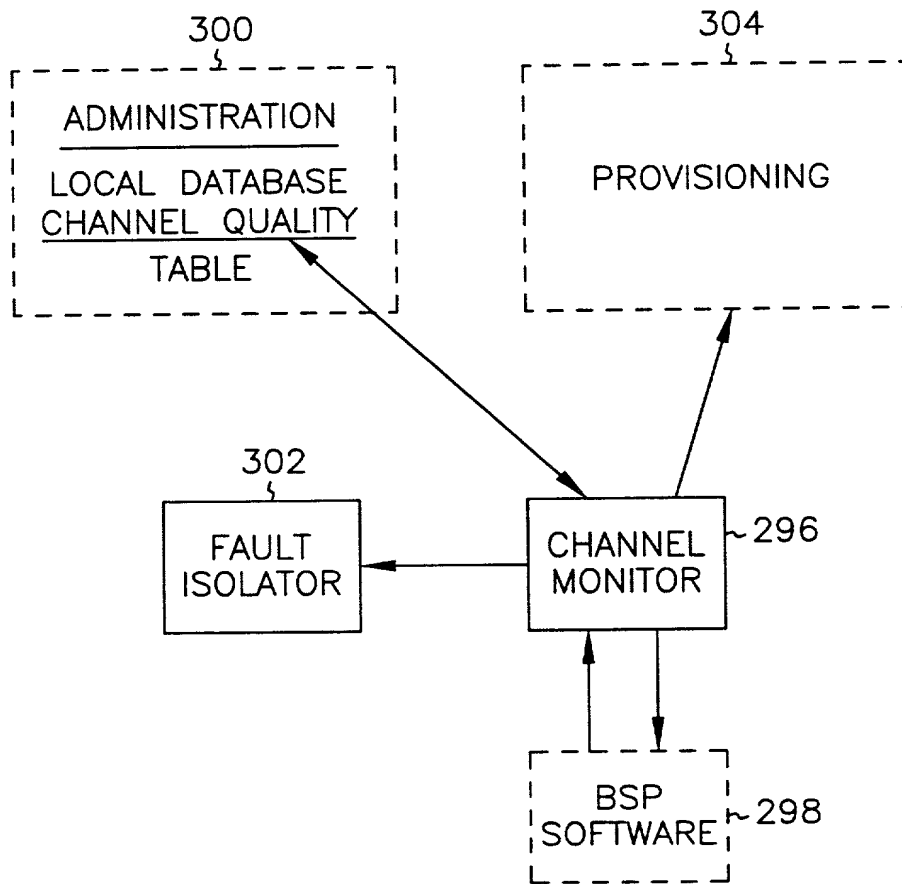


FIG. 40

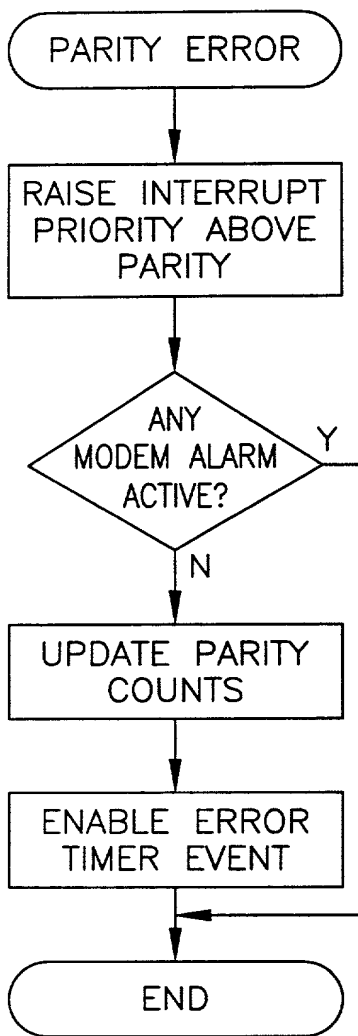


FIG. 41

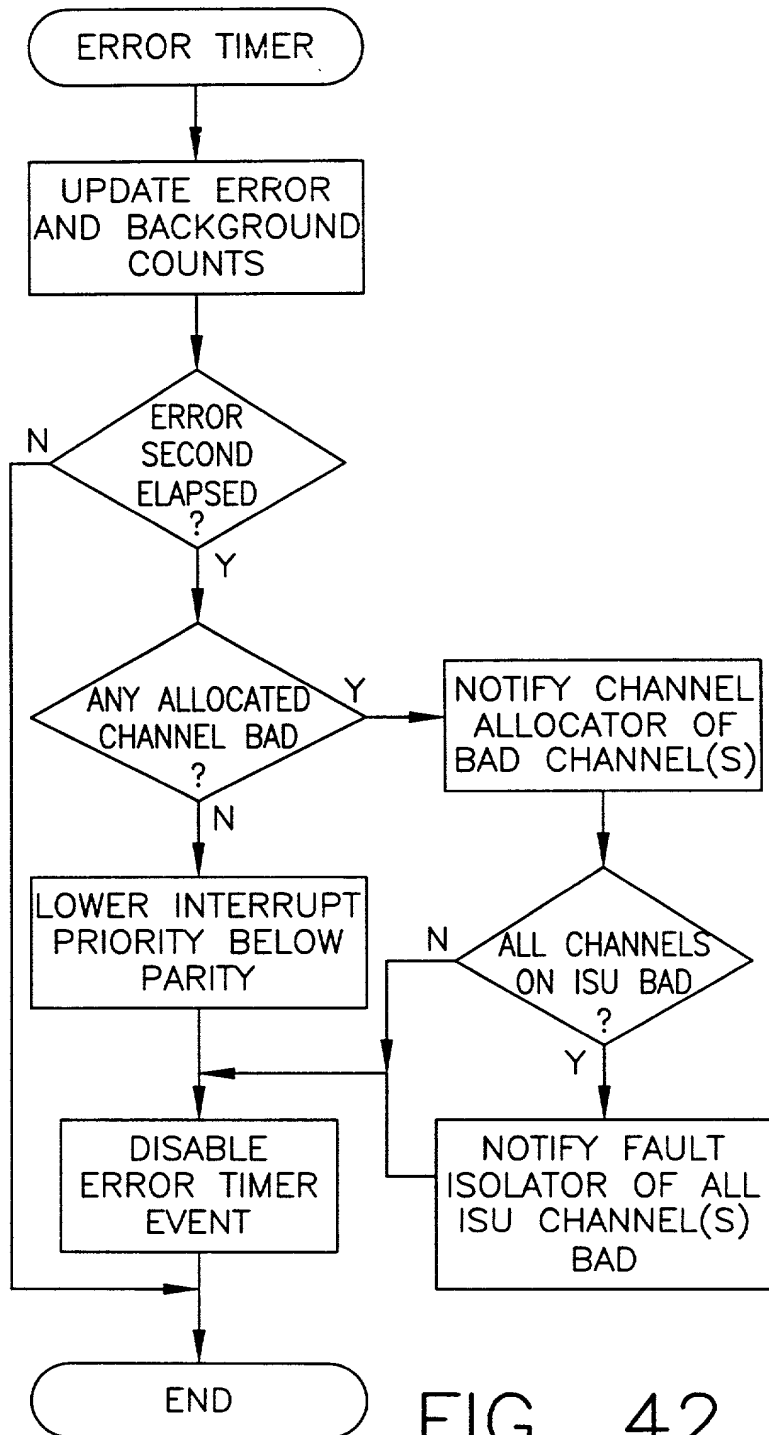


FIG. 42

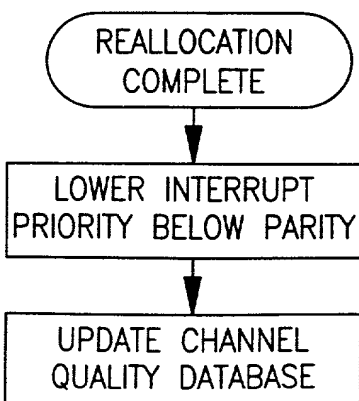
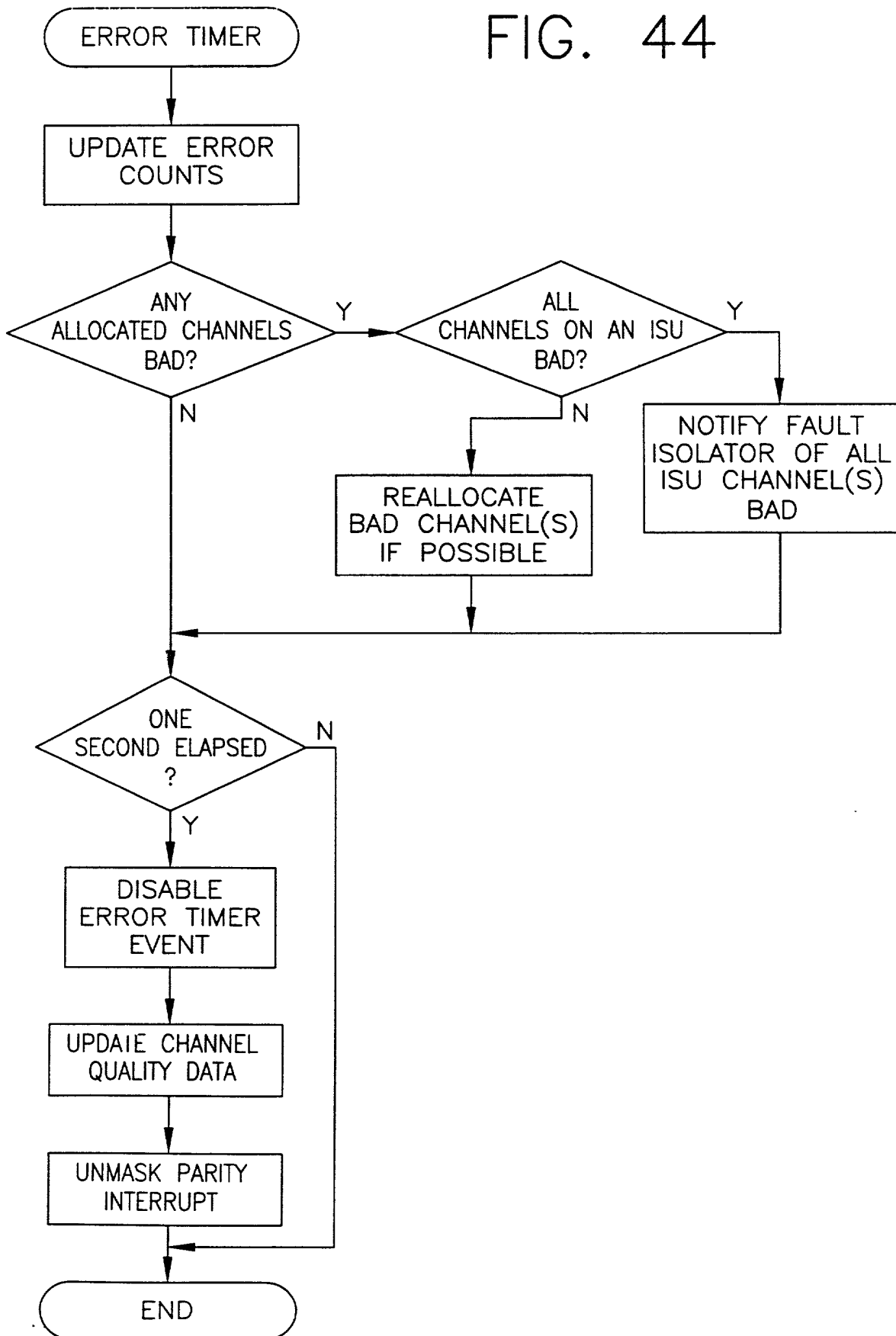


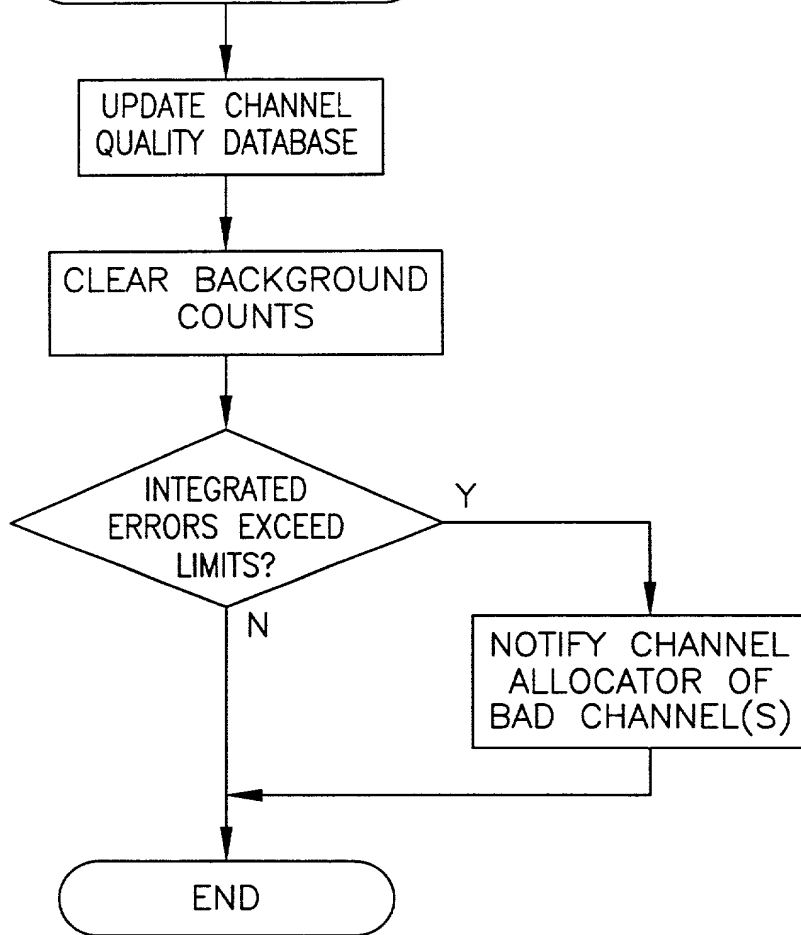
FIG. 43

FIG. 44



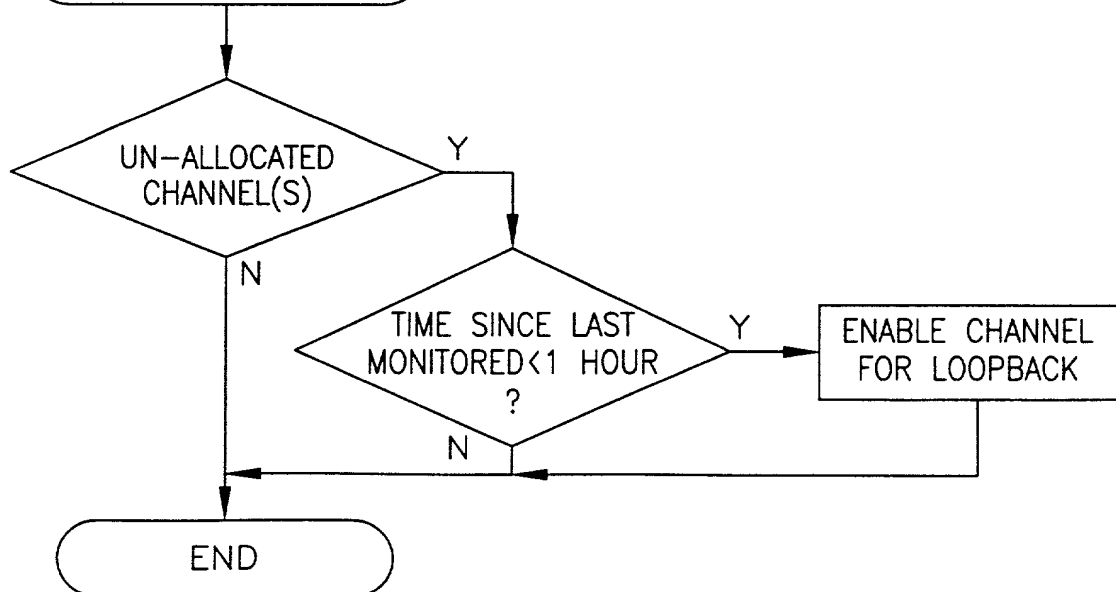
BACKGROUND TIMER

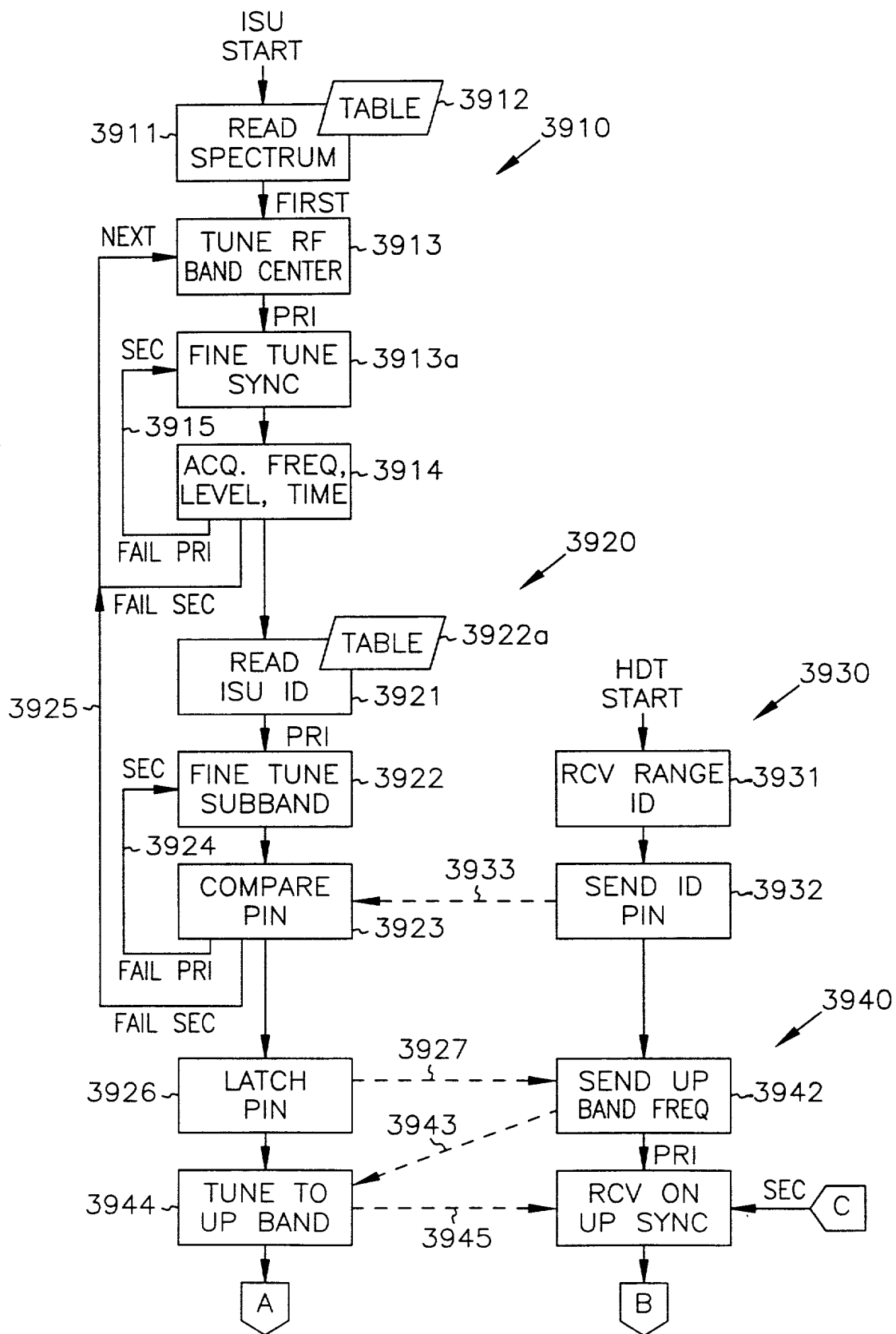
FIG. 45

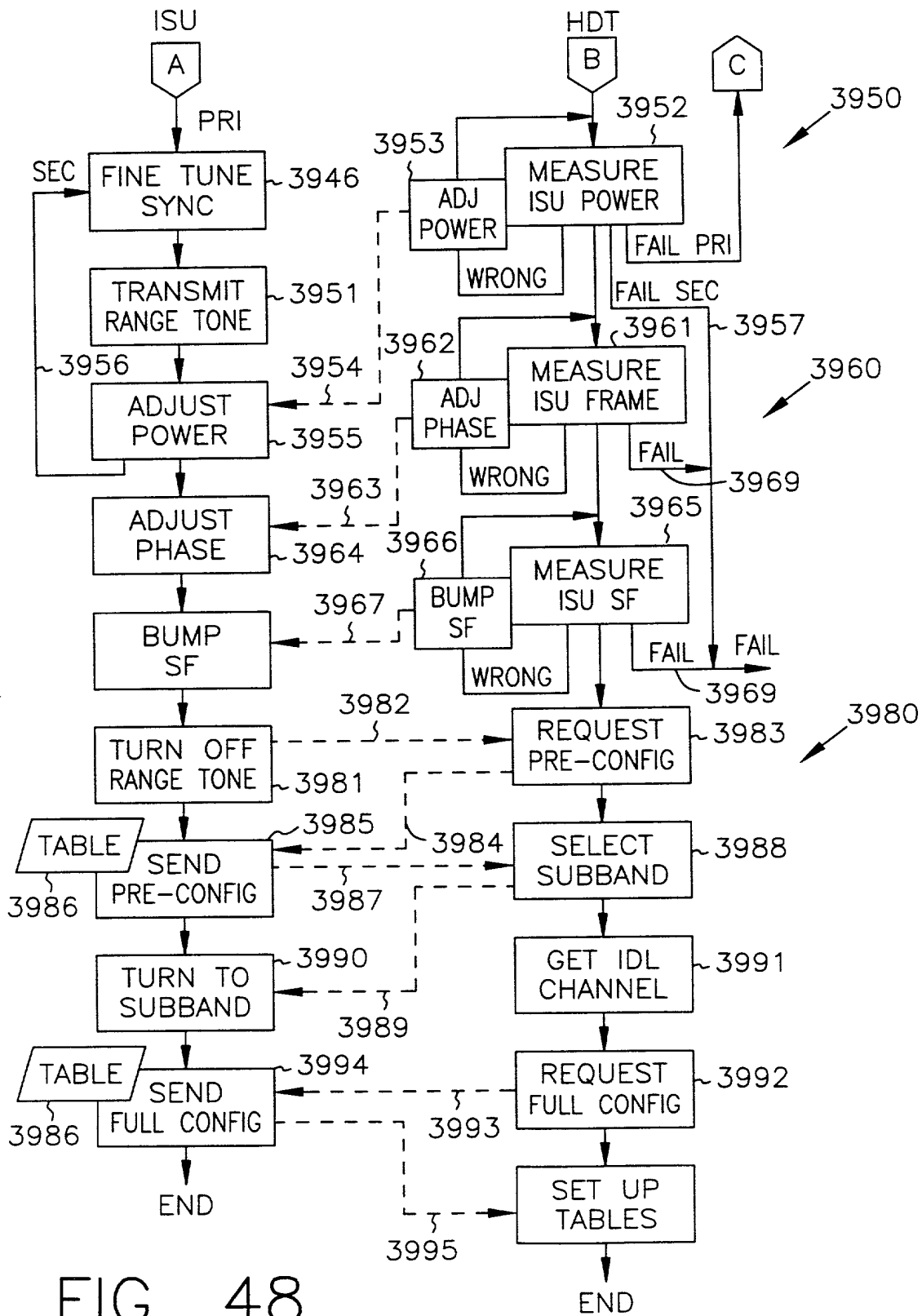


BACKGROUND TIMER

FIG. 46







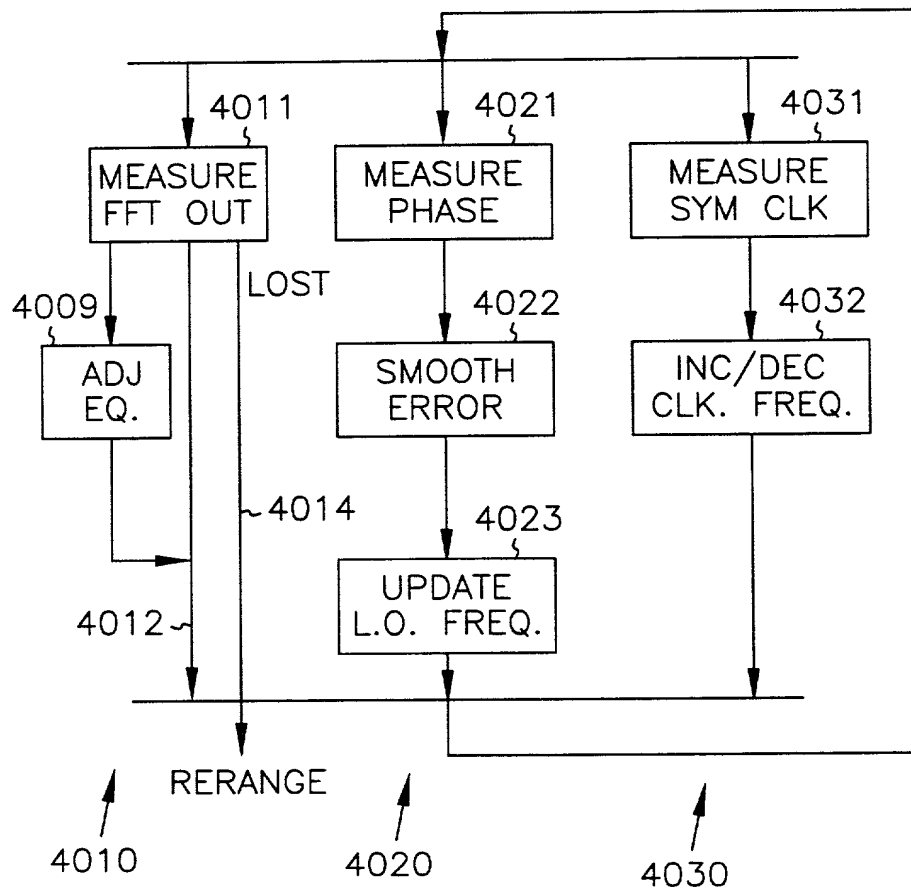


FIG. 49

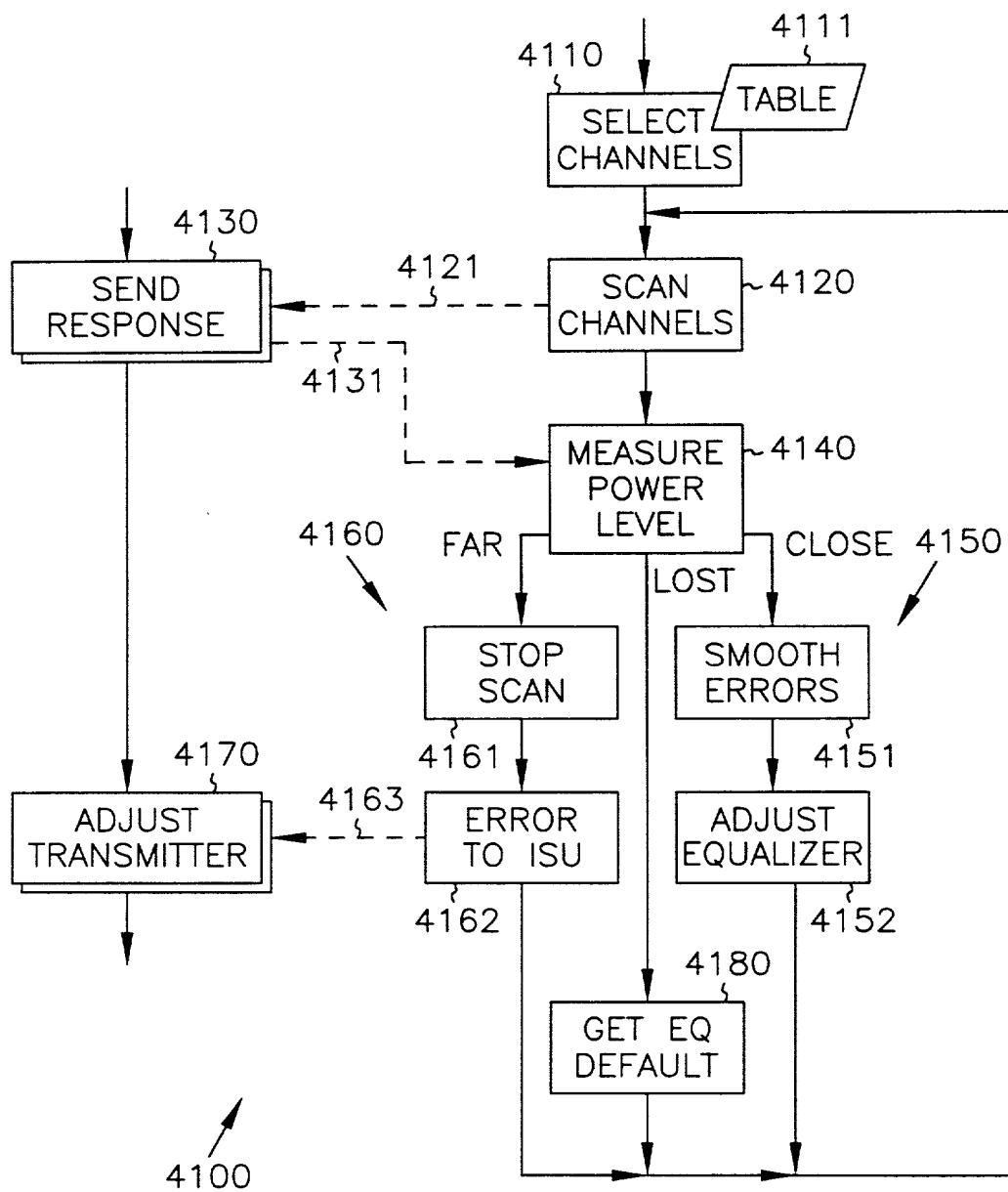


FIG. 50

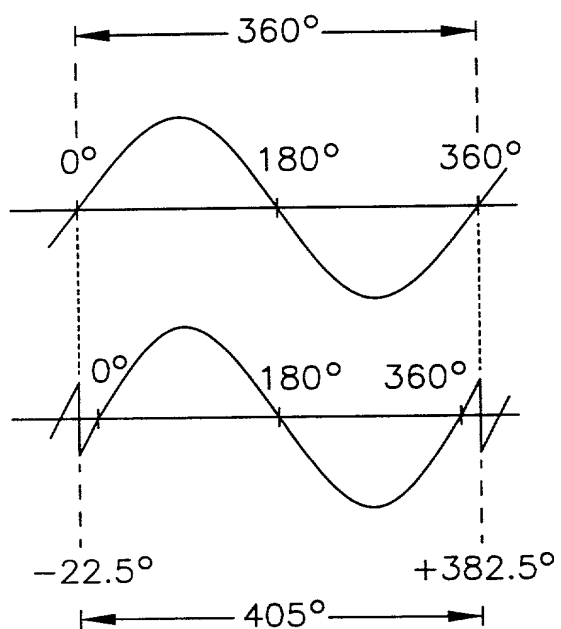


FIG. 52

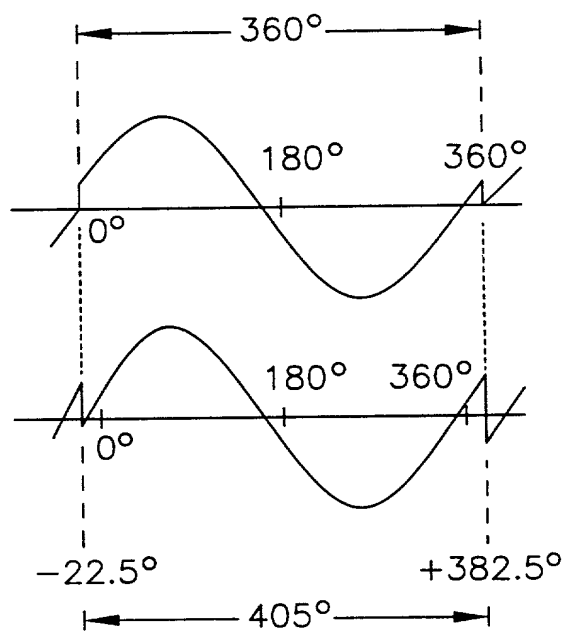


FIG. 53

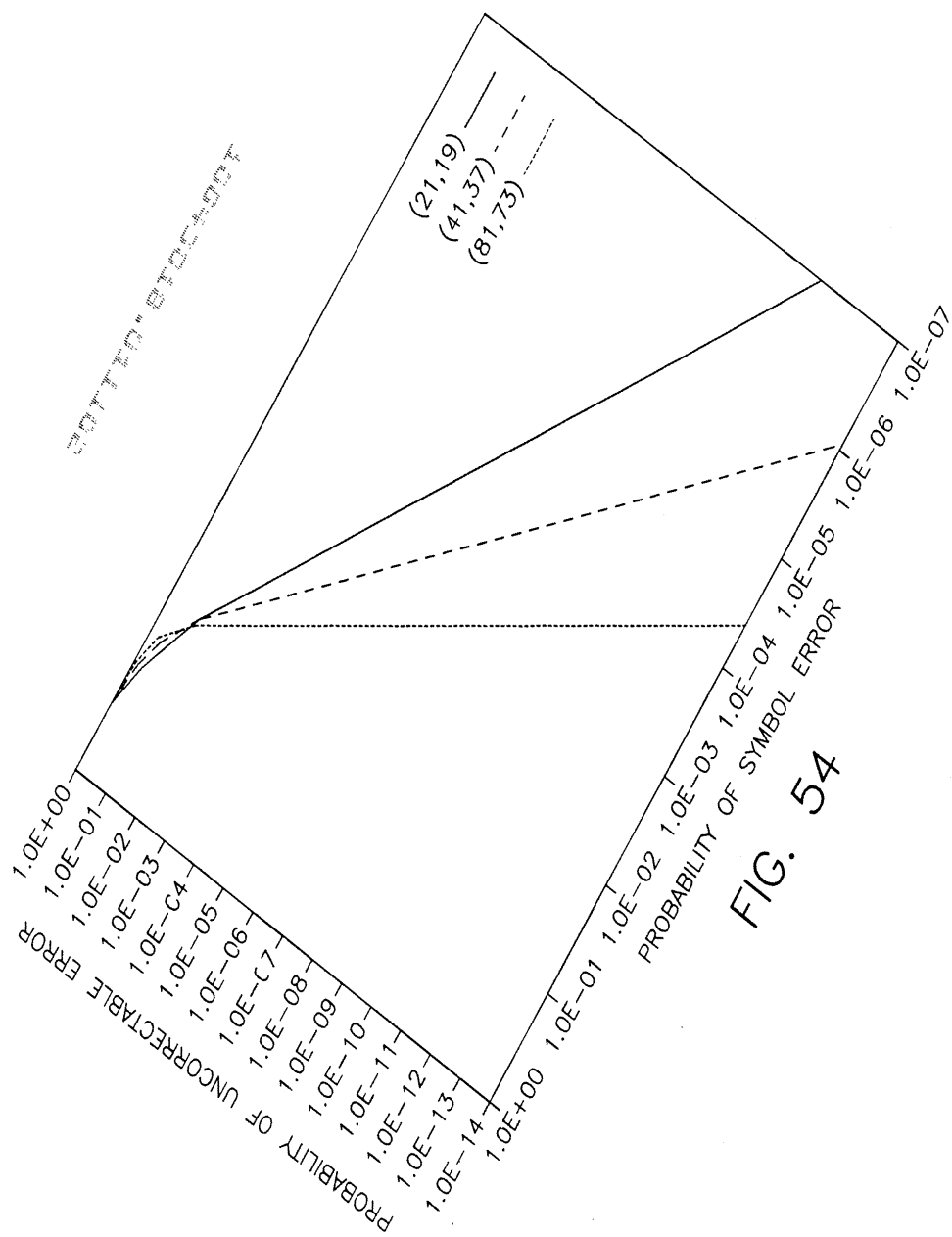


FIG. 54

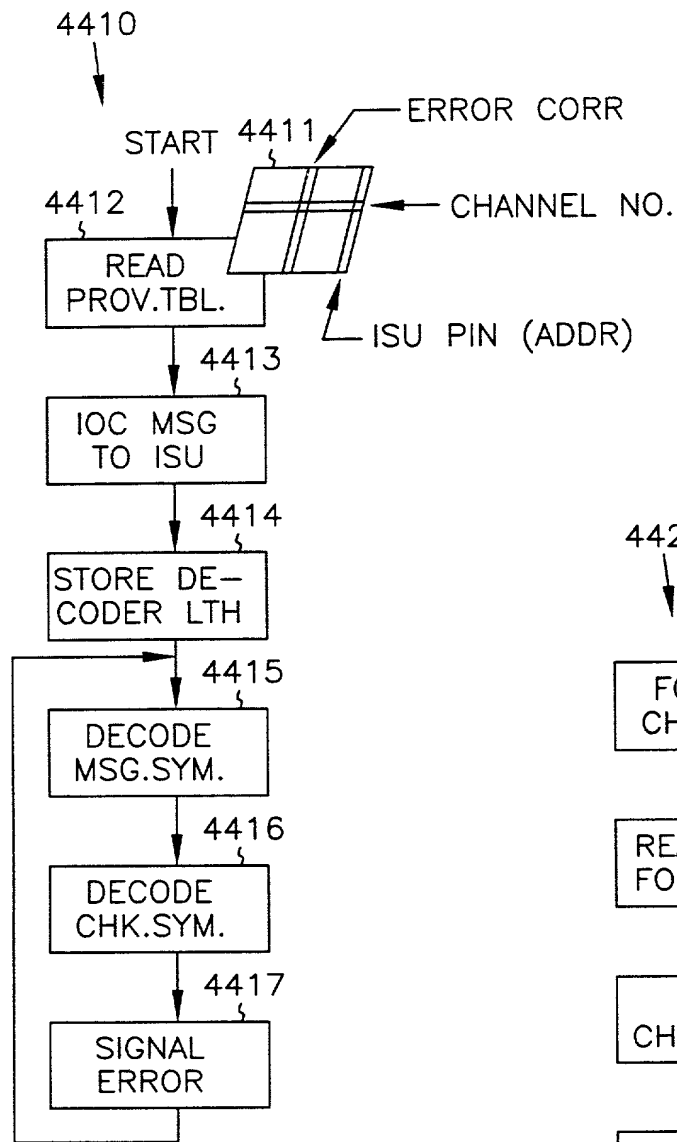


FIG. 55

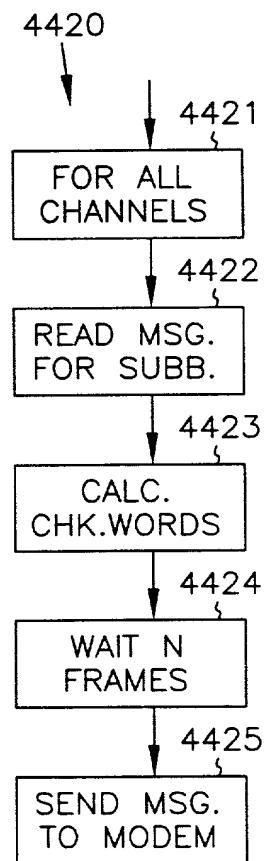


FIG. 56

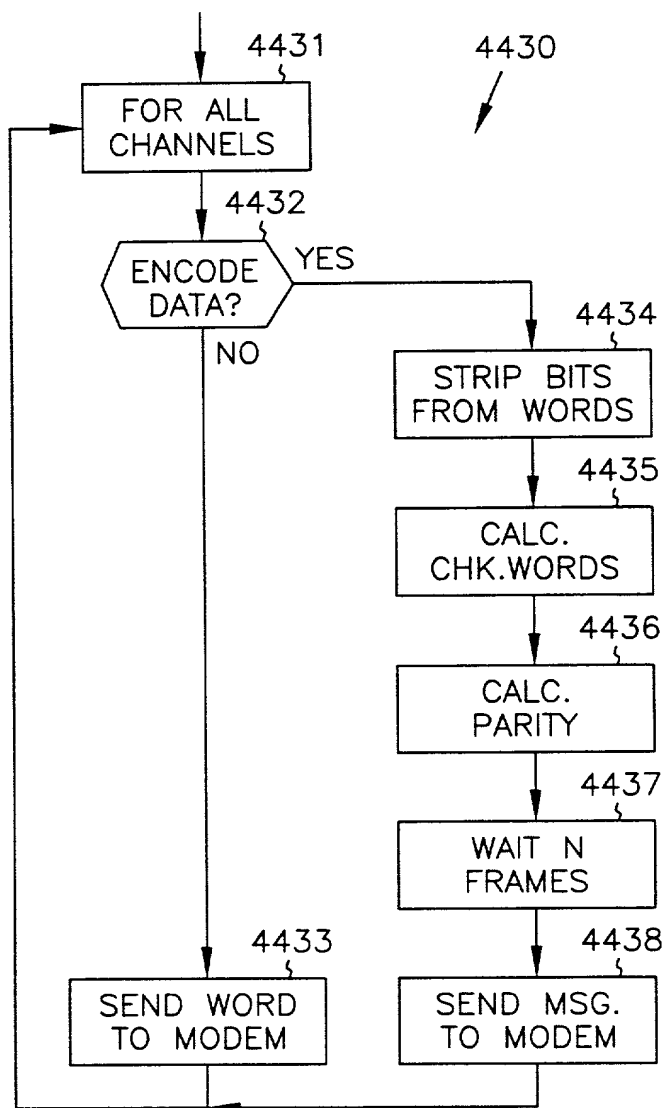


FIG. 57

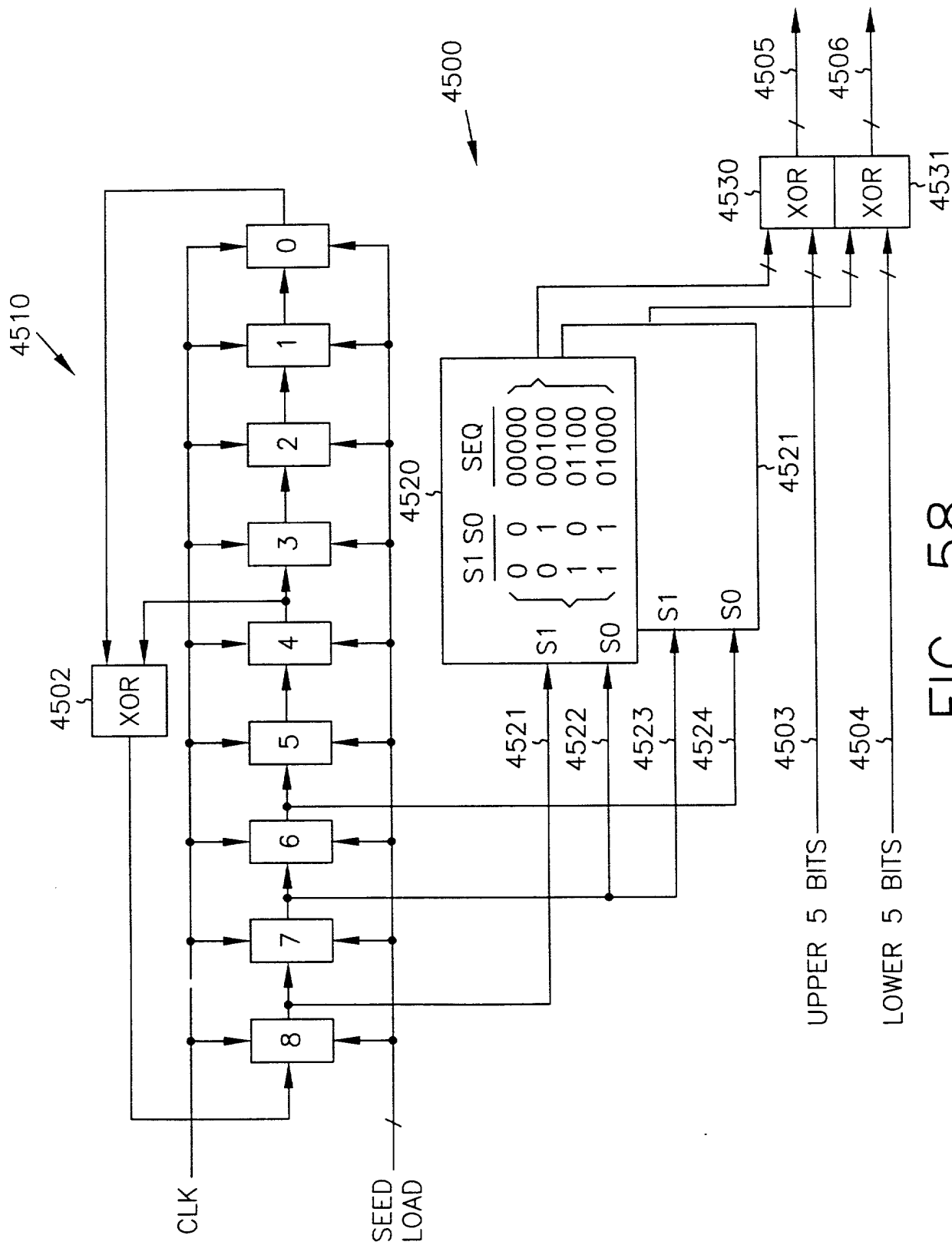


FIG. 58

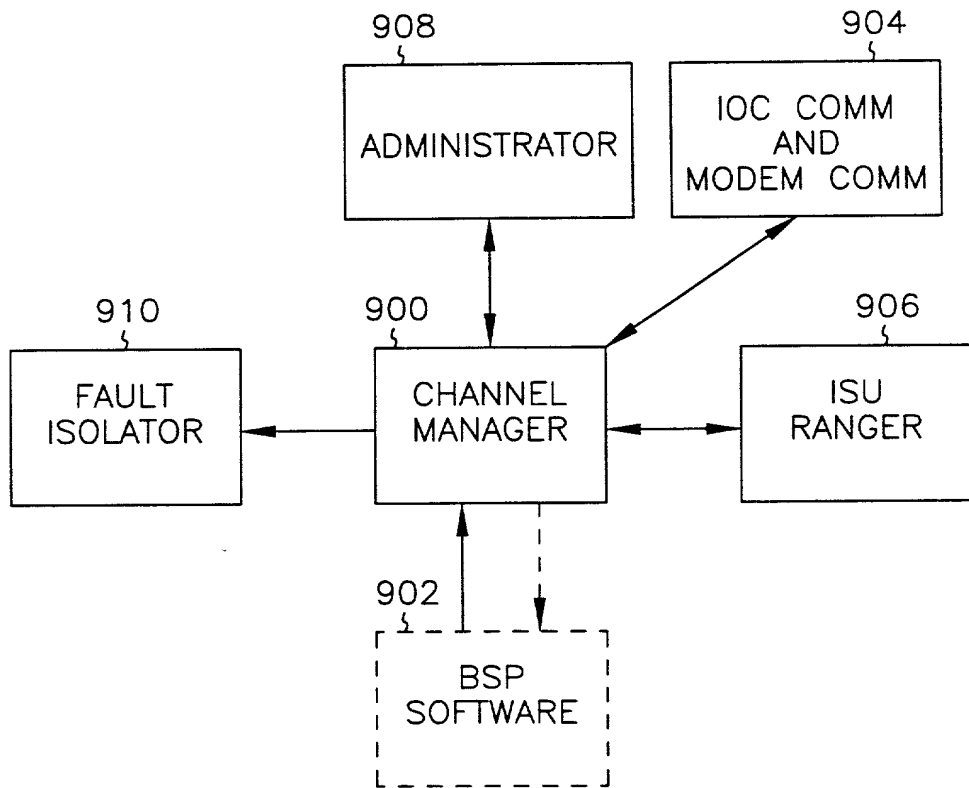


FIG. 59

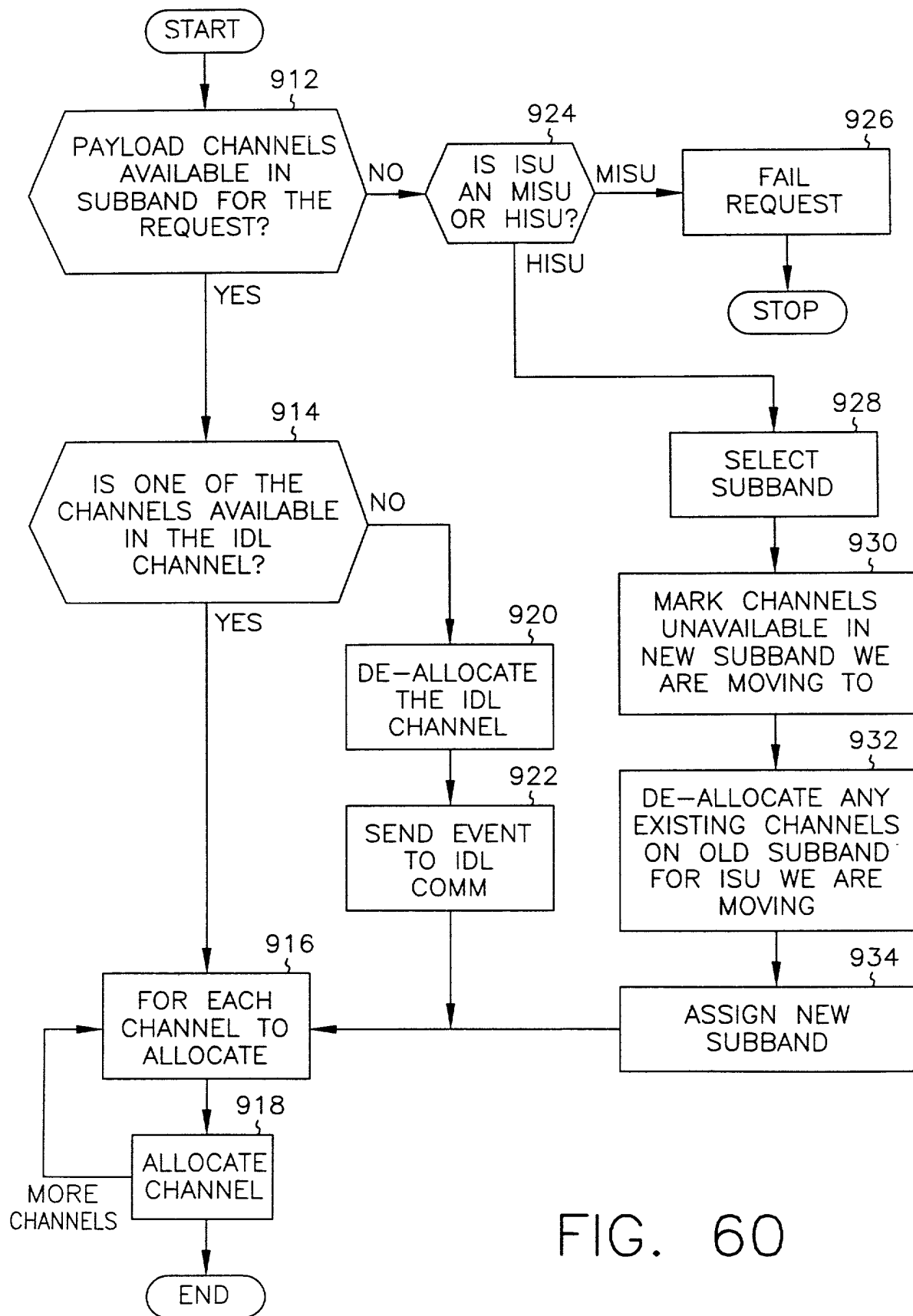


FIG. 60

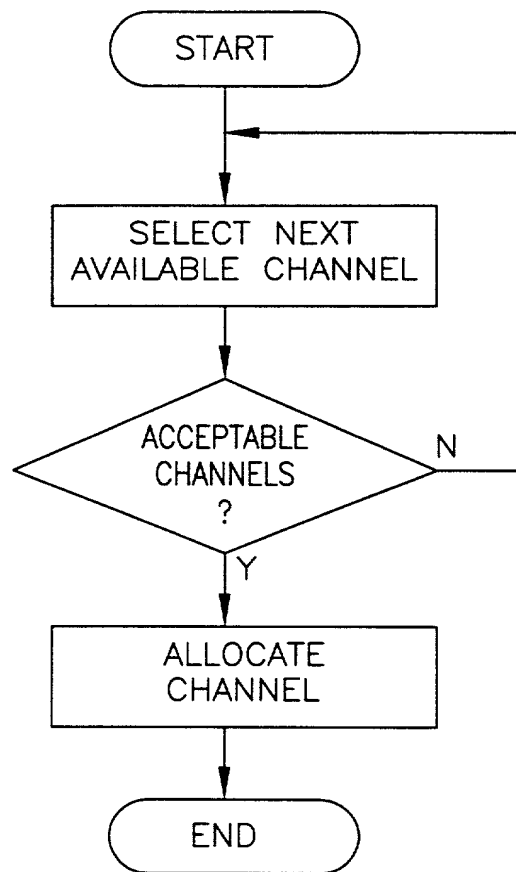


FIG. 61

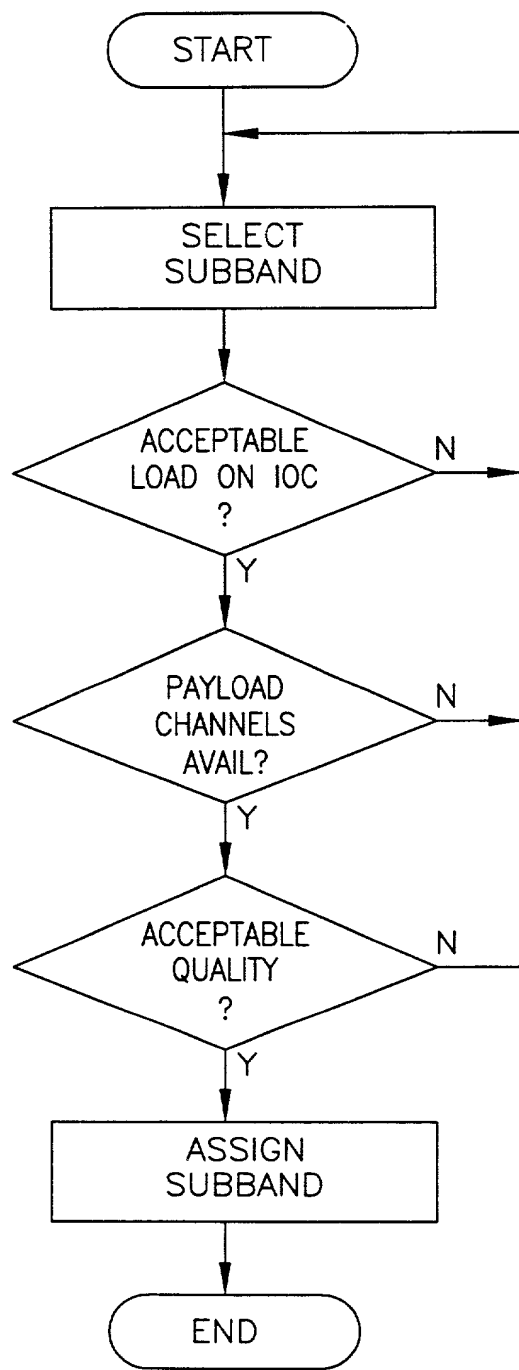


FIG. 62

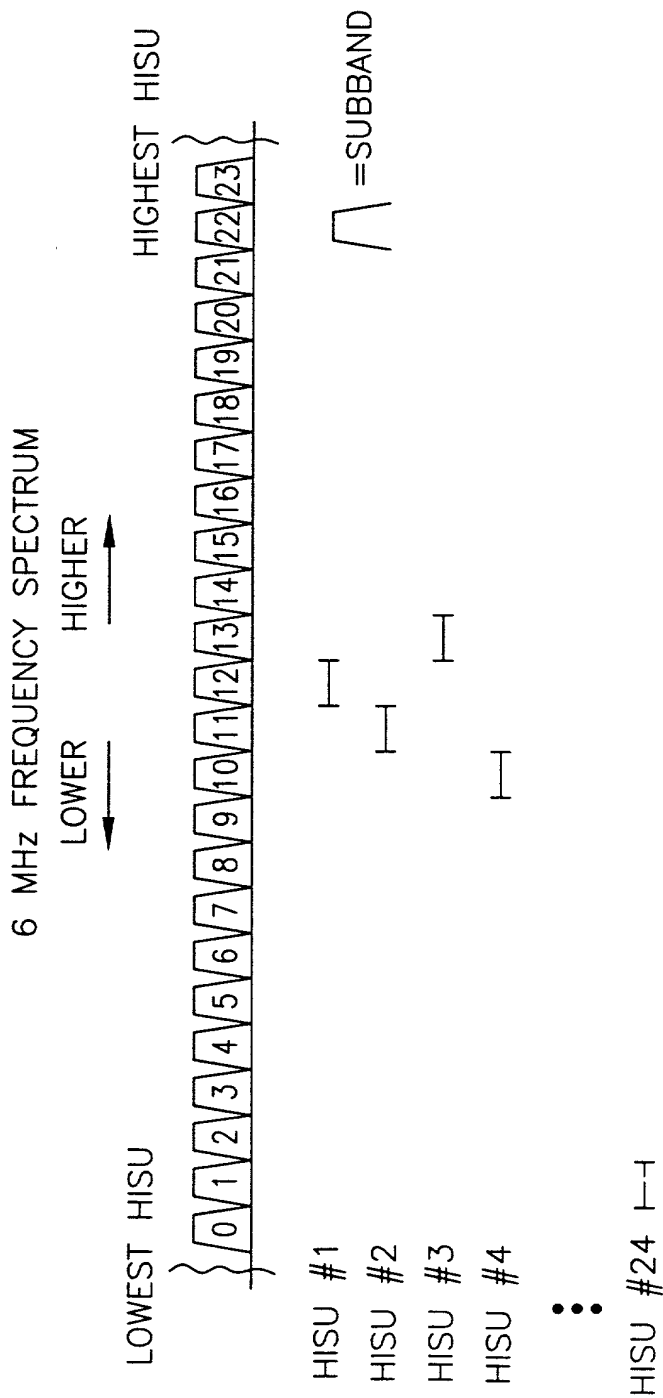


FIG. 63

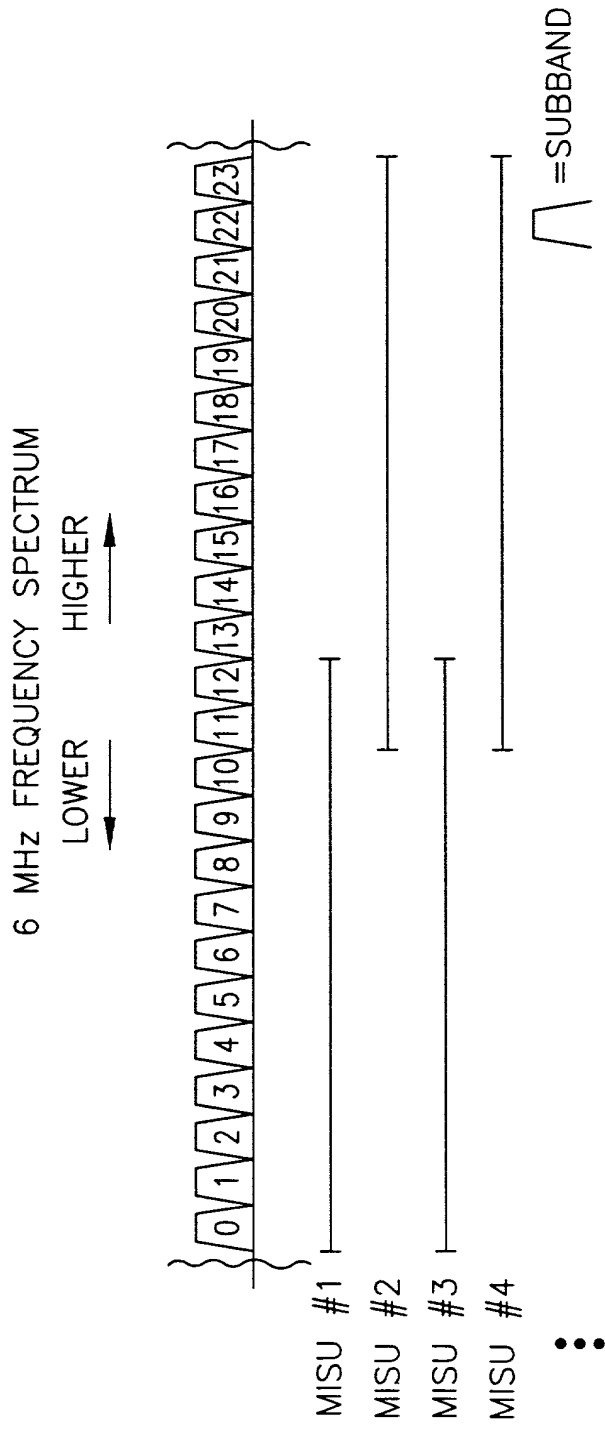


FIG. 64

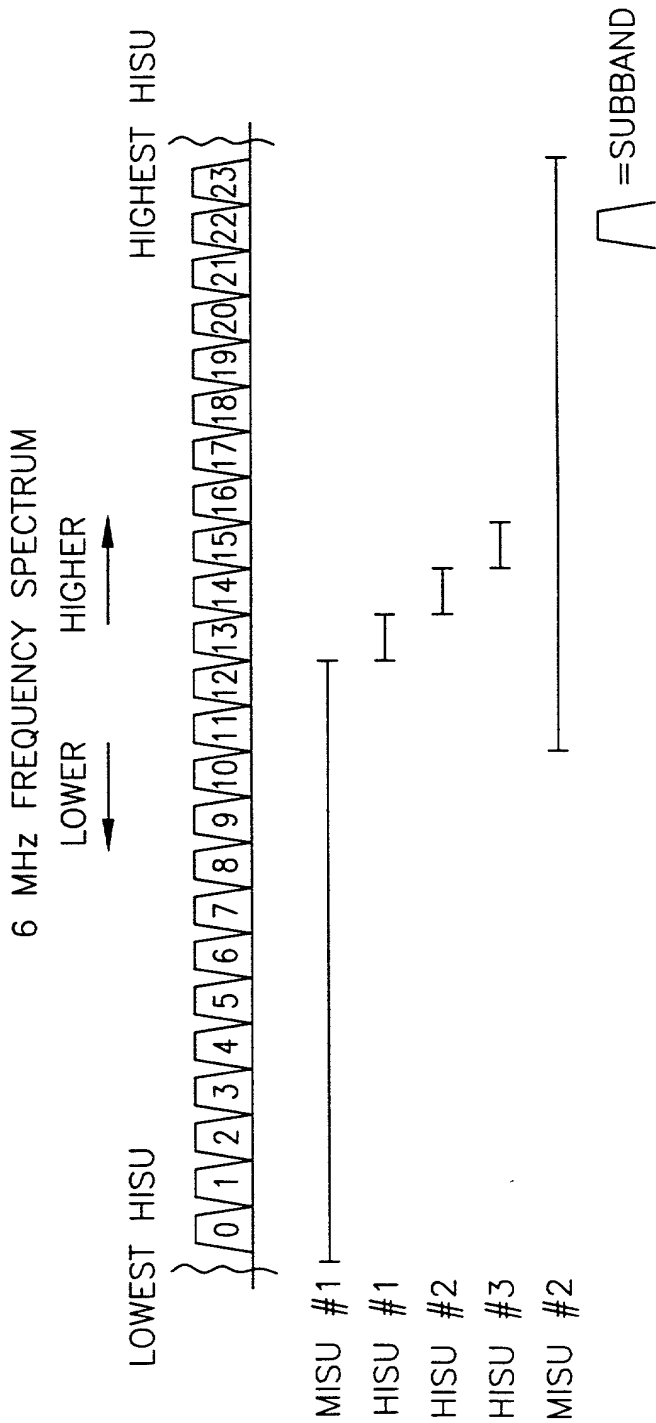


FIG. 65

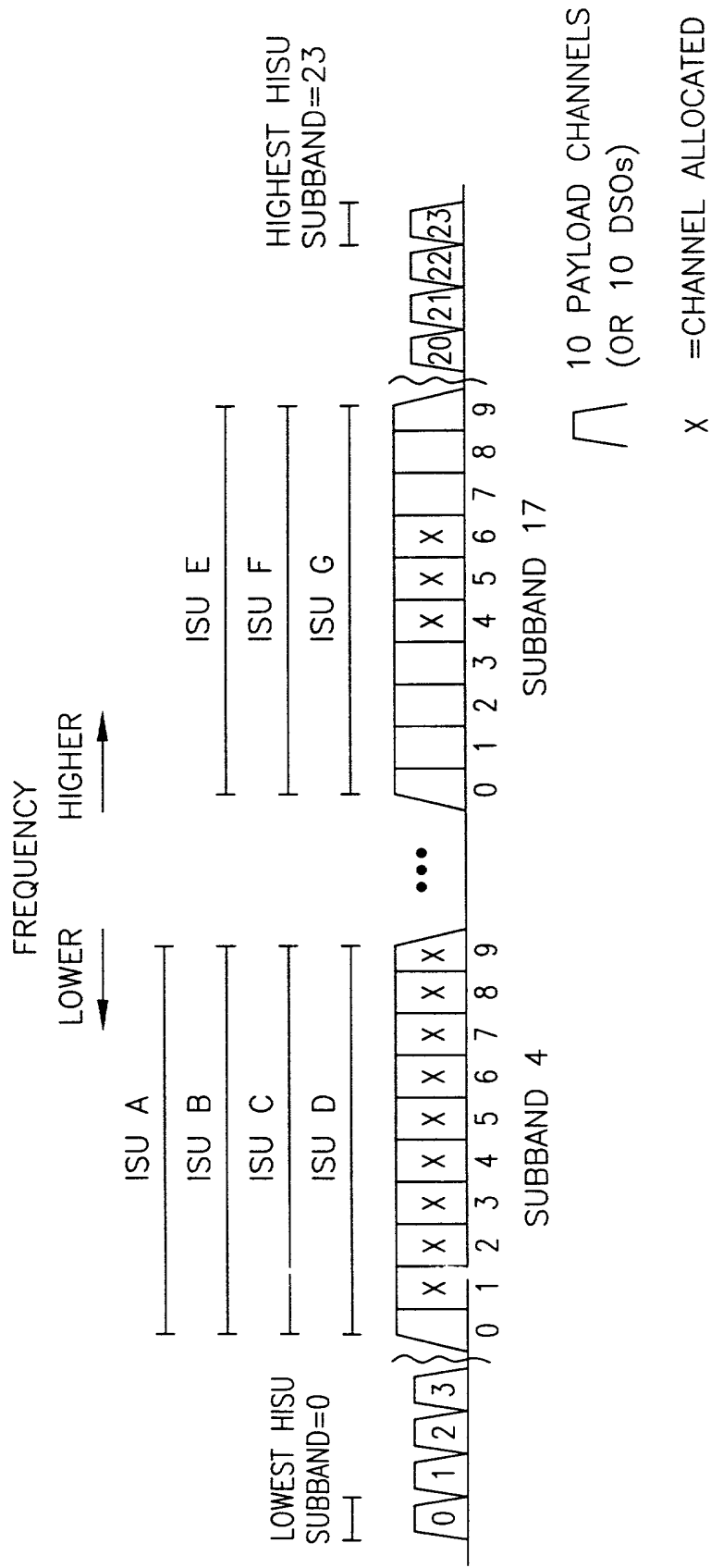


FIG. 66

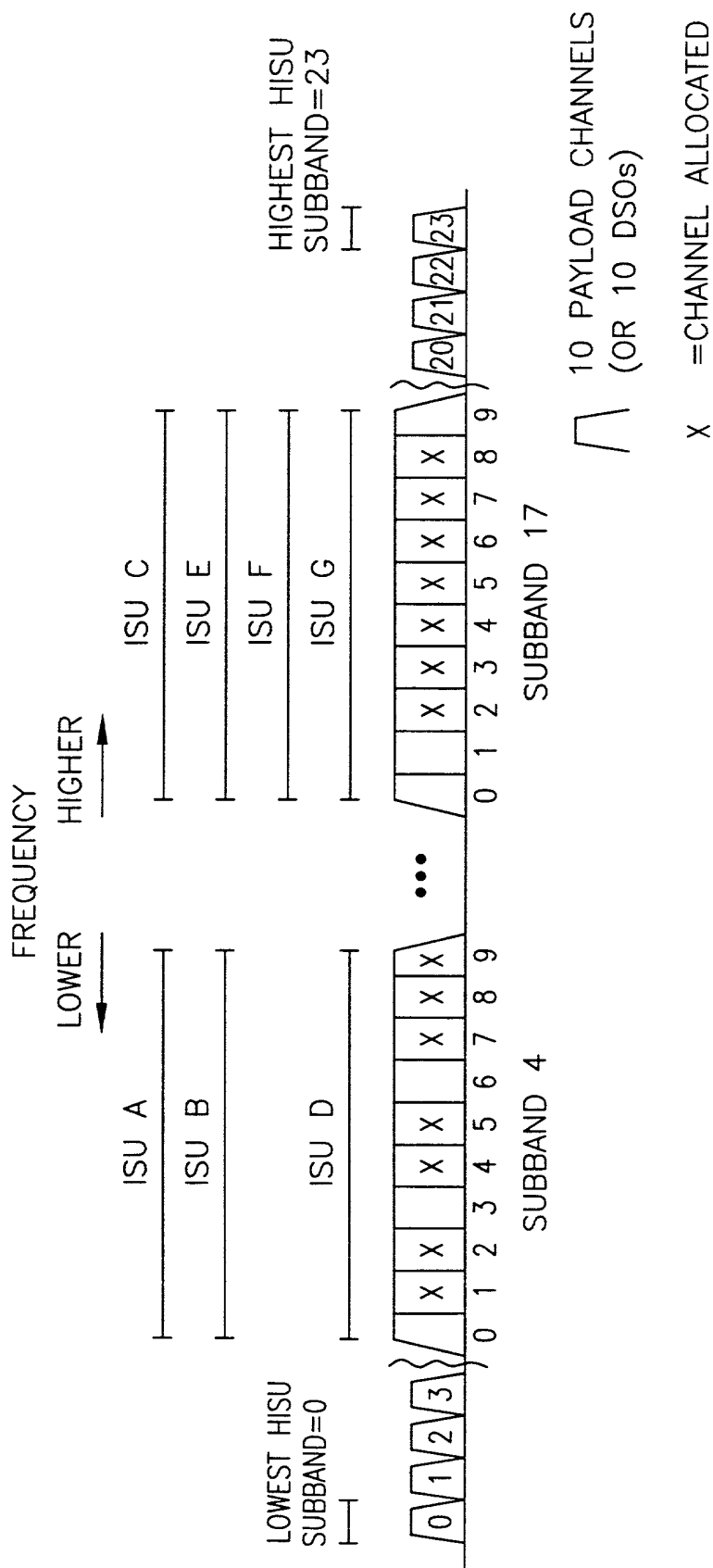


FIG. 67

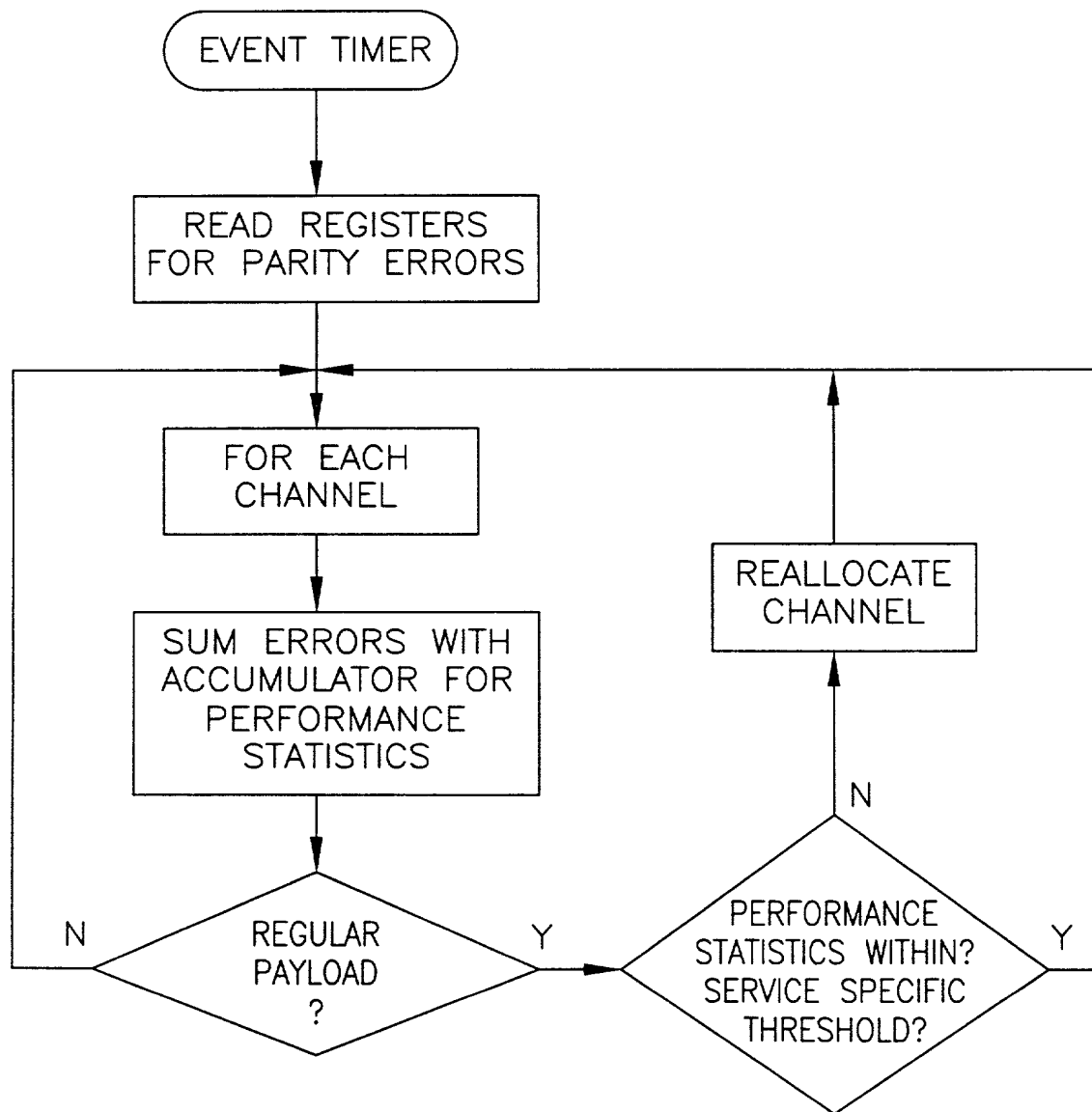


FIG. 68

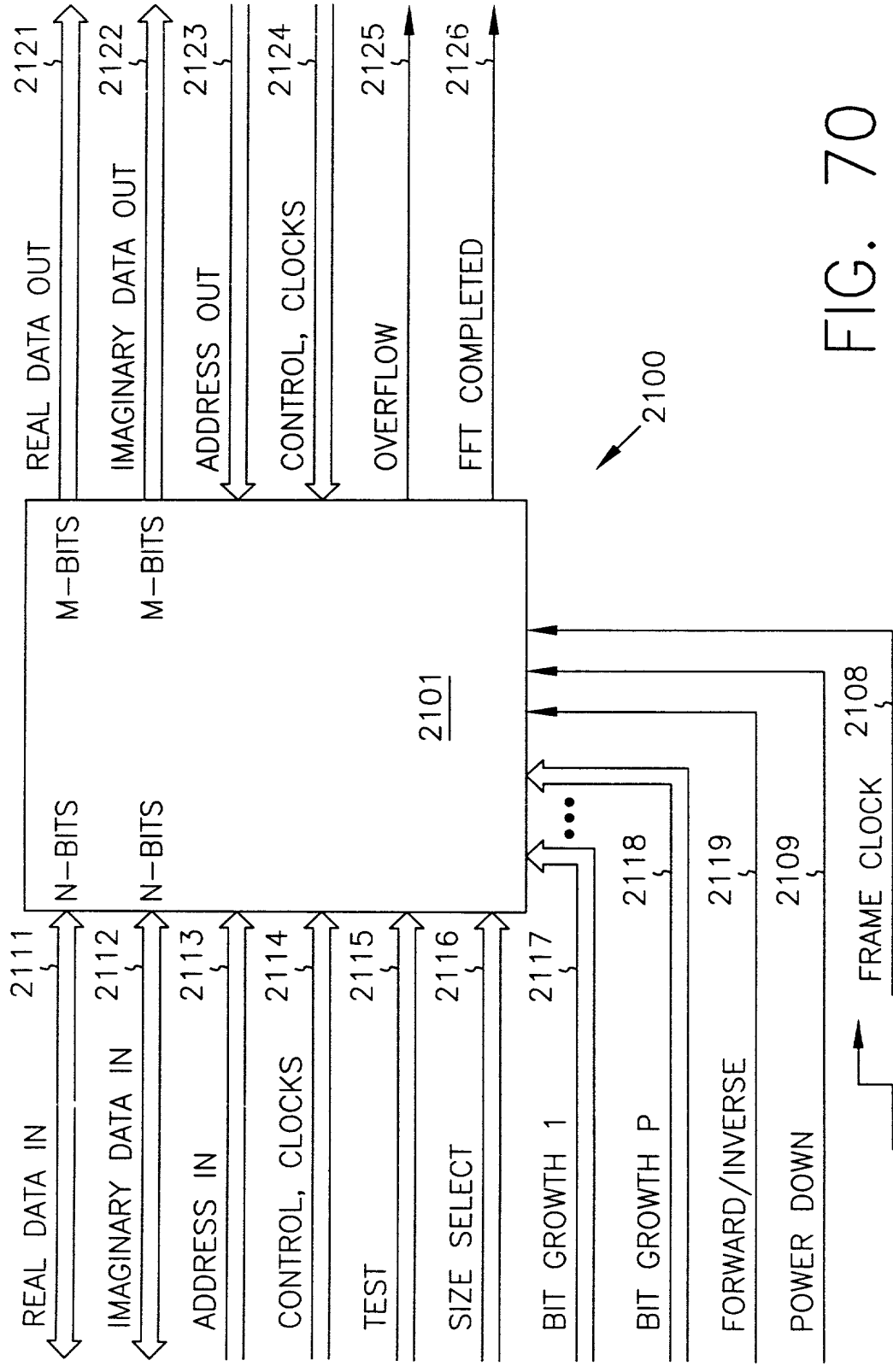


FIG. 70

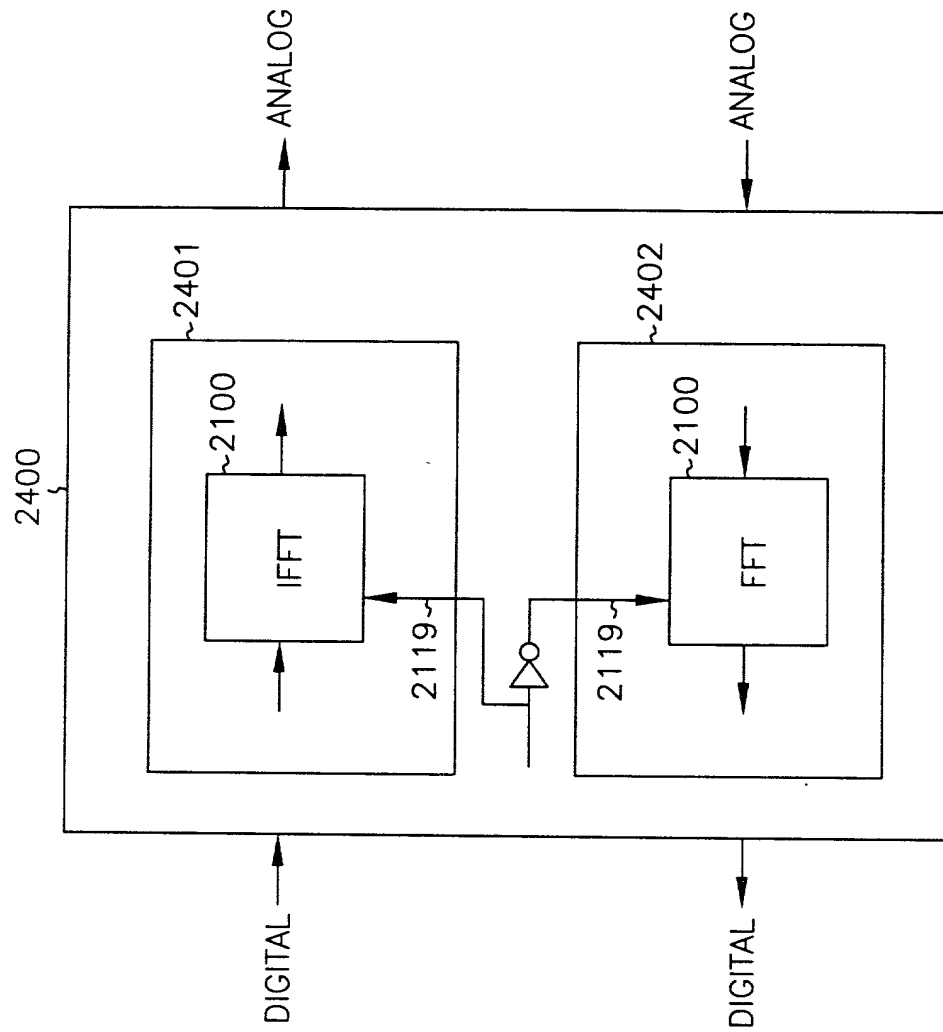


FIG. 71

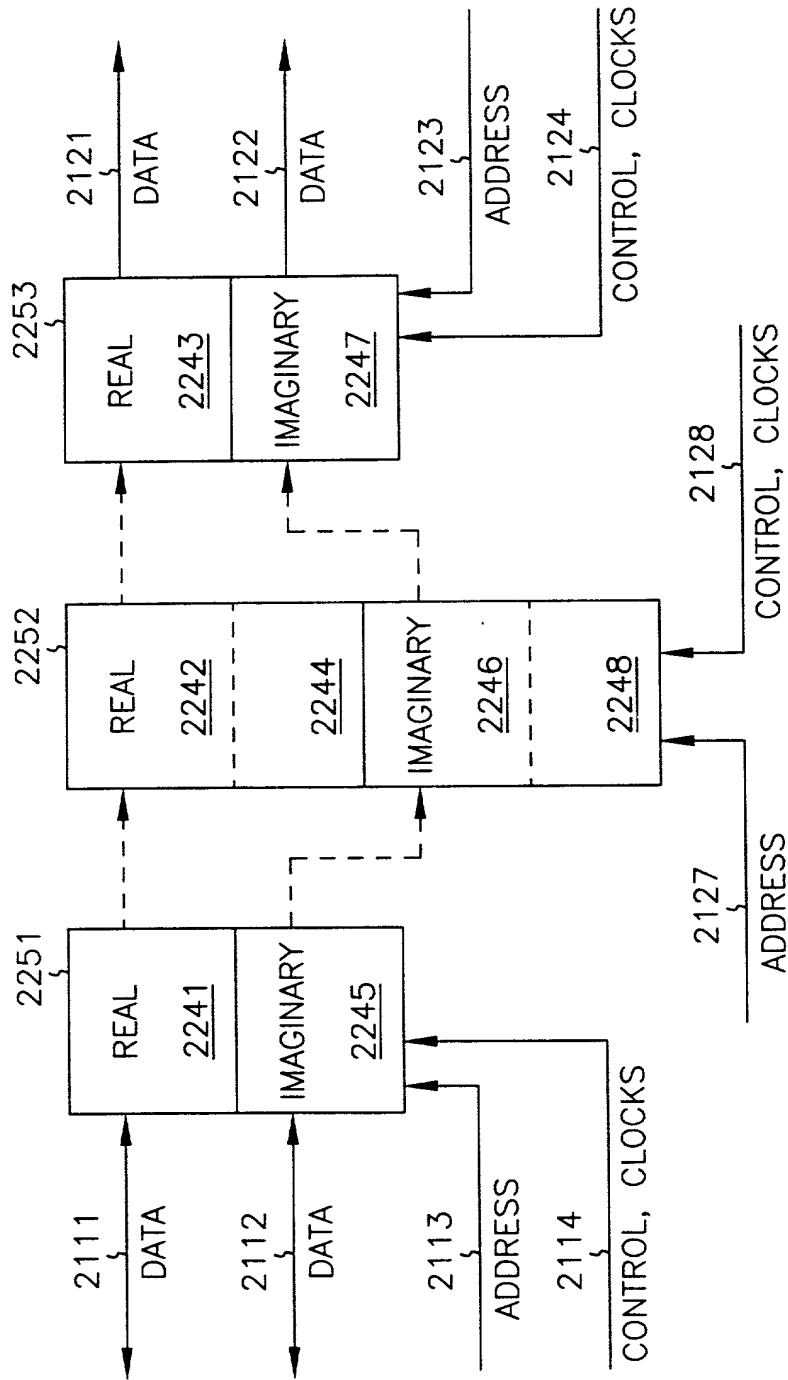


FIG. 72

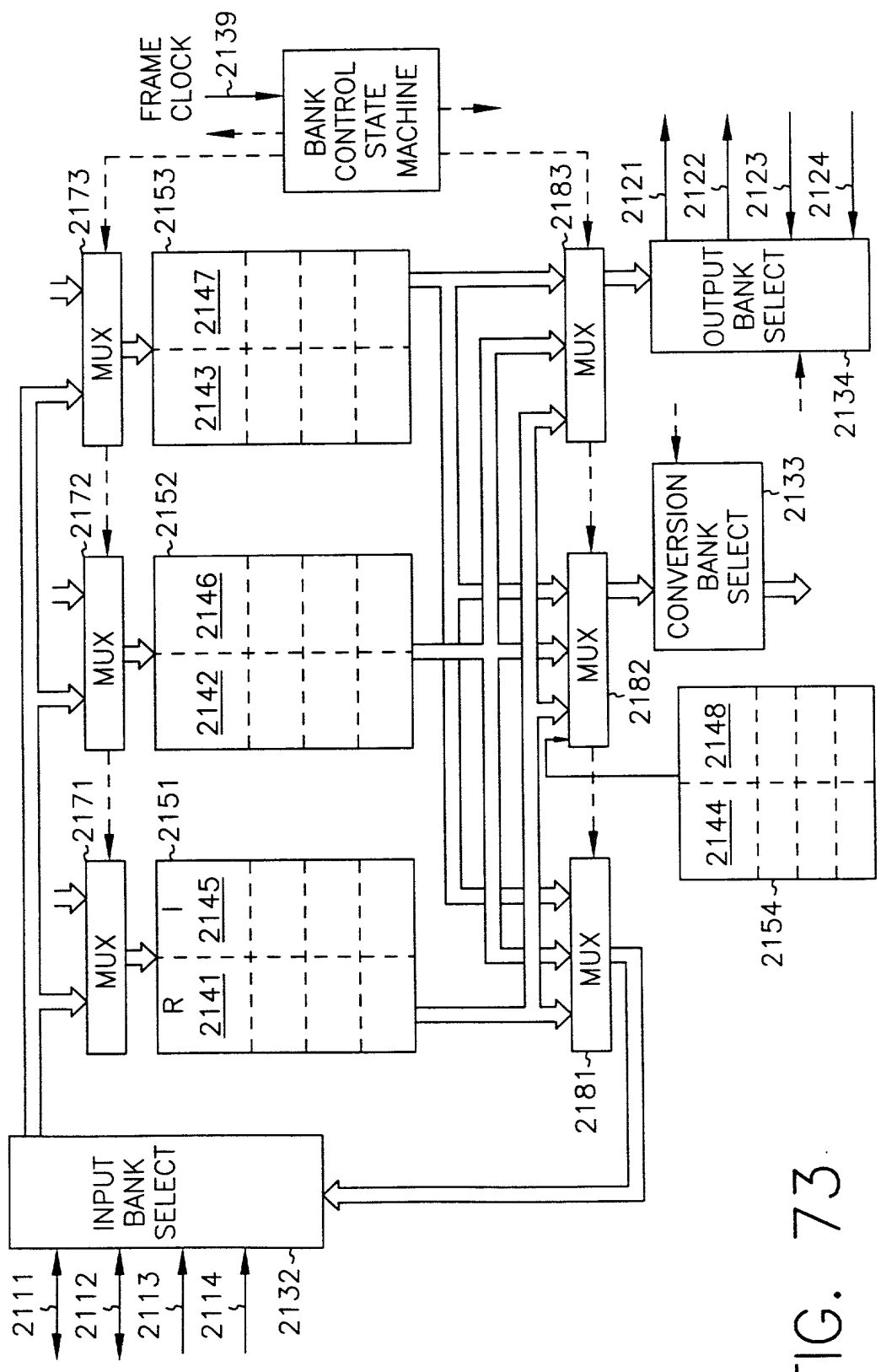
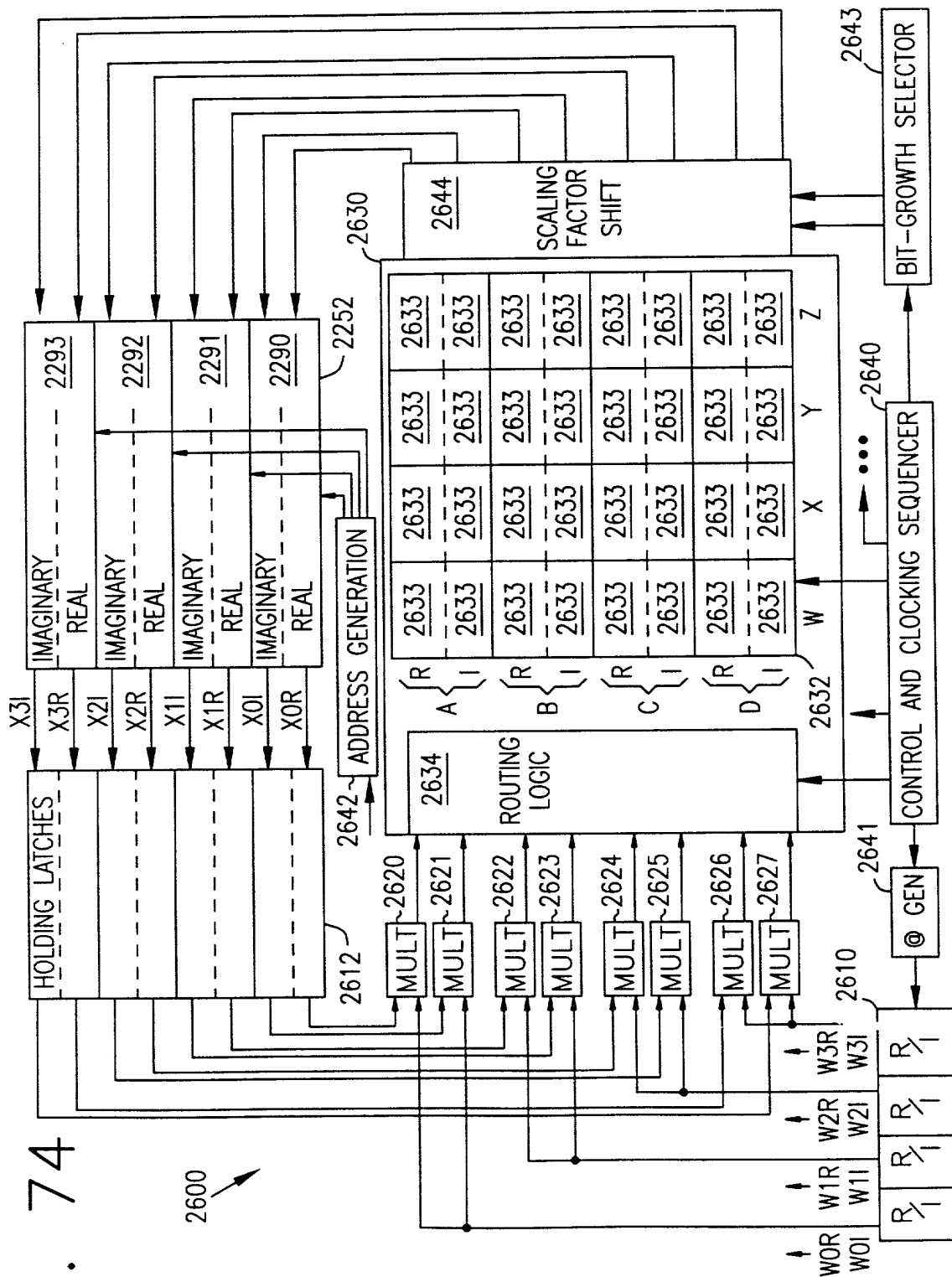


FIG. 73

FIG. 74



THIS TABLE SHOWS THE ORDER OF CALCULATION FOR A TRANSPOSED BUTTERFLY:

CO

AWR=WR AWI=WI	AXR=XR AXI=XI	AYR=YR AYI=YI	AZR=ZR AZI=ZI
BWR=WR BWI=WI	BXR=XR BXI=XI	BYR=YR BYI=YI	BZR=ZR BZI=ZI
CWR=WR CWI=WI	CXR=XR CXI=XI	CYR=YR CYI=YI	CZR=ZR CZI=ZI
DWR=WR DWI=WI	DXR=XR DXI=XI	DYR=YR DYI=YI	DZR=ZR DZI=ZI

FIG. 75

CI

AWR=AWR - WI AWI=AWI + WR	AXR=AXR - XI AXI=AXI + XR	AYR=AYR - YI AYI=AYI + YR	AZR=AZR - ZI AZI=AZI + ZR
BWR=BWR - WI BWI=BWI + WR	BXR=BXR - XI BXI=BXI + XR	BYR=BYR - YI BYI=BYI + YR	BZR=BZR - ZI BZI=BZI + ZR
CWR=CWR - WI CWI=CWI + WR	CXR=CXR - XI CXI=CXI + XR	CYR=CYR - YI CYI=CYI + YR	CZR=CZR - ZI CZI=CZI + ZR
DWR=DWR - WI DWI=DWI + WR	DXR=DXR - XI DXI=DXI + XR	DYR=DYR - YI DYI=DYI + YR	DZR=DZR - ZI DZI=DZI + ZR

FIG. 76

C2

~2632

AWR=AWR +WR AWI=AWI +WI	AXR=AXR +XI AXI=AXI -XR	AYR=AYR -YR AYI=AYI -YI	AZR=AZR -ZI AZI=AZI +ZR
BWR=BWR +WR BWI=BWI +WI	BXR=BXR +XI BXI=BXI -XR	BYR=BYR -YR BYI=BYI -YI	BZR=BZR -ZI BZI=BZI +ZR
CWR=CWR +WR CWI=CWI +WI	CXR=CXR +XI CXI=CXI -XR	CYR=CYR -YR CYI=CYI -YI	CZR=CZR -ZI CZI=CZI +ZR
DWR=DWR +WR DWI=DWI +WI	DXR=DXR +XI DXI=DXI -XR	DYR=DYR -YR DYI=DYI -YI	DZR=DZR -ZI DZI=DZI +ZR

2800

FIG. 77

C3

~2632

AWR=AWR -WI AWI=AWI +WR	AXR=AXR +XR AXI=AXI +XI	AYR=AYR +YI AYI=AYI -YR	AZR=AZR -ZR AZI=AZI -ZI
BWR=BWR -WI BWI=BWI +WR	BXR=BXR +XR BXI=BXI +XI	BYR=BYR +YI BYI=BYI -YR	BZR=BZR -ZR BZI=BZI -ZI
CWR=CWR -WI CWI=CWI +WR	CXR=CXR +XR CXI=CXI +XI	CYR=CYR +YI CYI=CYI -YR	CZR=CZR -ZR CZI=CZI -ZI
DWR=DWR -WI DWI=DWI +WR	DXR=DXR +XR DXI=DXI +XI	DYR=DYR +YI DYI=DYI -YR	DZR=DZR -ZR DZI=DZI -ZI

2800

FIG. 78

C4

~2632	AWR=AWR +WR AWI=AWI +WI	AXR=AXR -XR AXI=AXI -XI	AYR=AYR +YR AYI=AYI +YI	AZR=AZR -ZR AZI=AZI -ZI
	BWR=BWR +WR BWI=BWI +WI	BXR=BXR -XR BXI=BXI -XI	BYR=BYR +YR BYI=BYI +YI	BZR=BZR -ZR BZI=BZI -ZI
	CWR=CWR +WR CWI=CWI +WI	CXR=CXR -XR CXI=CXI -XI	CYR=CYR +YR CYI=CYI +YI	CZR=CZR -ZR CZI=CZI -ZI
	DWR=DWR +WR DWI=DWI +WI	DXR=DXR -XR DXI=DXI -XI	DYR=DYR +YR DYI=DYI +YI	DZR=DZR -ZR DZI=DZI -ZI

2800

FIG. 79

C5

~2632	AWR=AWR -WI AWI=AWI +WR	AXR=AXR +XI AXI=AXI -XR	AYR=AYR -YI AYI=AYI +YR	AZR=AZR +ZI AZI=AZI -ZR
	BWR=BWR -WI BWI=BWI +WR	BXR=BXR +XI BXI=BXI -XR	BYR=BYR -YI BYI=BYI +YR	BZR=BZR +ZI BZI=BZI -ZR
	CWR=CWR -WI CWI=CWI +WR	CXR=CXR +XI CXI=CXI -XR	CYR=CYR -YI CYI=CYI +YR	CZR=CZR +ZI CZI=CZI -ZR
	DWR=DWR -WI DWI=DWI +WR	DXR=DXR +XI DXI=DXI -XR	DYR=DYR -YI DYI=DYI +YR	DZR=DZR +ZI DZI=DZI -ZR

2800

FIG. 80

C6

~2632

AWR=AWR +WR AWI=AWI +WI	AXR=AXR -XI AXI=AXI +XR	AYR=AYR -YR AYI=AYI -YI	AZR=AZR +ZI AZI=AZI -ZR
BWR=BWR +WR BWI=BWI +WI	BXR=BXR -XI BXI=BXI +XR	BYR=BYR -YR BYI=BYI -YI	BZR=BZR +ZI BZI=BZI -ZR
CWR=CWR +WR CWI=CWI +WI	CXR=CXR -XI CXI=CXI +XR	CYR=CYR -YR CYI=CYI -YI	CZR=CZR +ZI CZI=CZI -ZR
DWR=DWR +WR DWI=DWI +WI	DXR=DXR -XI DXI=DXI +XR	DYR=DYR -YR DYI=DYI -YI	DZR=DZR +ZI DZI=DZI -ZR

2800

FIG. 81

C7

~2632

AWR=AWR -WI AWI=AWI +WR	AXR=AXR -XR AXI=AXI -XI	AYR=AYR +YI AYI=AYI -YR	AZR=AZR -ZR AZI=AZI +ZI
BWR=BWR -WI BWI=BWI +WR	BXR=BXR -XR BXI=BXI -XI	BYR=BYR +YI BYI=BYI -YR	BZR=BZR -ZR BZI=BZI +ZI
CWR=CWR -WI CWI=CWI +WR	CXR=CXR -XR CXI=CXI -XI	CYR=CYR +YI CYI=CYI -YR	CZR=CZR -ZR CZI=CZI +ZI
DWR=DWR -WI DWI=DWI +WR	DXR=DXR -XR DXI=DXI -XI	DYR=DYR +YI DYI=DYI -YR	DZR=DZR -ZR DZI=DZI +ZI

2800

FIG. 82

THIS TABLE SHOWS THE ORDER OF CALCULATION FOR A TRANSPOSED BUTTERFLY:

2632

2810

C0	AWR = WR+XR+YR+ZR AWI = WI+XI+YI+ZI	AXR = WR-XI-YR+ZI AXI = WI+XR-YI-ZR	AYR = WR-XR+YR-ZR AYI = WI-XI+YI-ZI	AZR = WR+XI-YR-ZI AZI = WI-XR-YI+ZR
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

FIG. 83

2632

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C1	AWR = AWR-(WI+XI+YI+ZI) AWI = AWI+(WR+XR+YR+ZR)	AXR = AXR-(WI+XR-YI-ZR) AXI = AXI+(WR-XI-YR+ZI)	AYR = AYR-(WI-XI+YI-ZI) AYI = AYI+(WR-XR+YR-ZR)	AZR = AZR-(WI-XR-YI+ZR) AZI = AZI+(WR+XI-YR-ZI)
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

FIG. 84

2632

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C2	-	-	-	-	-
	-	-	-	-	-
	BWR = WR+XR+YR+ZR BWI = WI+XI+YI+ZI	BXR = WR-XI-YR+ZI BXI = WI+XR-YI-ZR	BYR = WR-XR+YR-ZR BYI = WI-XI+YI-ZI	BZR = WR+XI-YR-ZI BZI = WI-XR-YI+ZR	
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	

FIG. 85

2632

2810

C3	-	-	-	-	-
	-	-	-	-	-
	BWR = BWR-(WI+XI+YI+ZI) BWI = BWI+(WR+XR+YR+ZR)	BXR = BXR-(WI+XR-YI-ZR) BXI = BXI+(WR-XI-YR+ZI)	BYR = BYR-(WI-XI+YI-ZI) BYI = BYI+(WR-XR+YR-ZR)	BZR = BZR-(WI-XR-YI+ZR) BZI = BZI+(WR+XI-YR-ZI)	
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	

FIG. 86

[illegible]

C5		2632		2810	
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
$CWR = CWR - (WI + XI + YI + ZI)$ $CWI = CWI + (WR + XR + YR + ZR)$	$CXR = CXR - (WI + XR - YI - ZR)$ $CXI = CXI + (WR - XI - YR + ZI)$	$CYR = CYR - (WI - XI + YI - ZI)$ $CYI = CYI + (WR - XR + YR - ZR)$	$CZR = CZR - (WI - XR - YI + ZR)$ $CZI = CZI + (WR + XI - YR - ZI)$	—	—
—	—	—	—	—	—

2632

2810

C6	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
DWR = WR+XR+YR+ZR DWI = WI+XI+YI+ZI	DXR = WR-XI-YR+ZI DXI = WI+XR-YI-ZR	DYR = WR-XR+YR-ZR DYI = WI-XI+YI-ZI	DZR = WR+XI-YR-ZI DZI = WI-XR-YI+ZR		

FIG. 89

2632

2810

C7	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
DWR = DWR-(WI+XI+YI+ZI) DWI = DWI+(WR+XR+YR+ZR)	DXR = DXR-(WI+XR-YI-ZR) DXI = DXI+(WR-XI-YR+ZI)	DYR = DYR-(WI-XI+YI-ZI) DYI = DYI+(WR-XR+YR-ZR)	DZR = DZR-(WI-XR-YI+ZR) DZI = DZI+(WR+XI-YR-ZI)		

FIG. 90

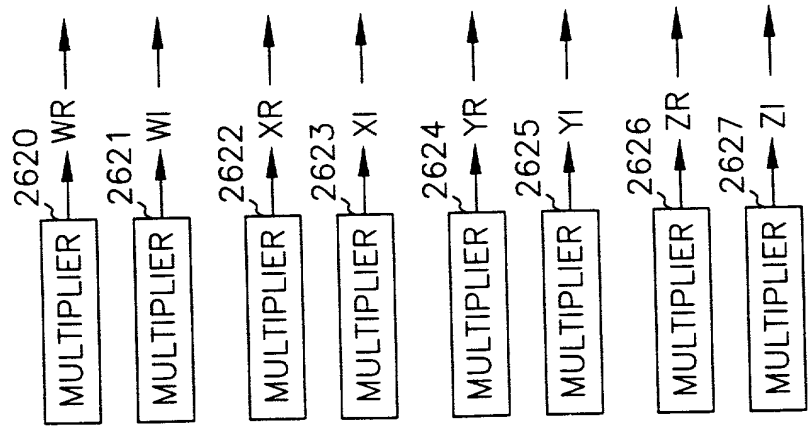
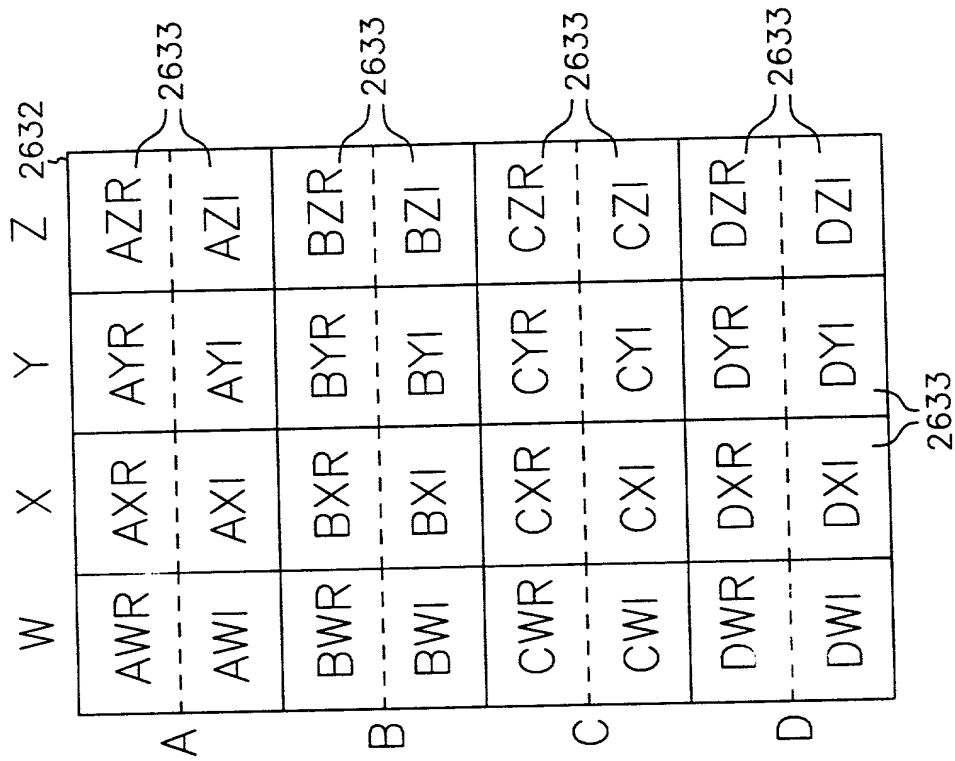


FIG. 91

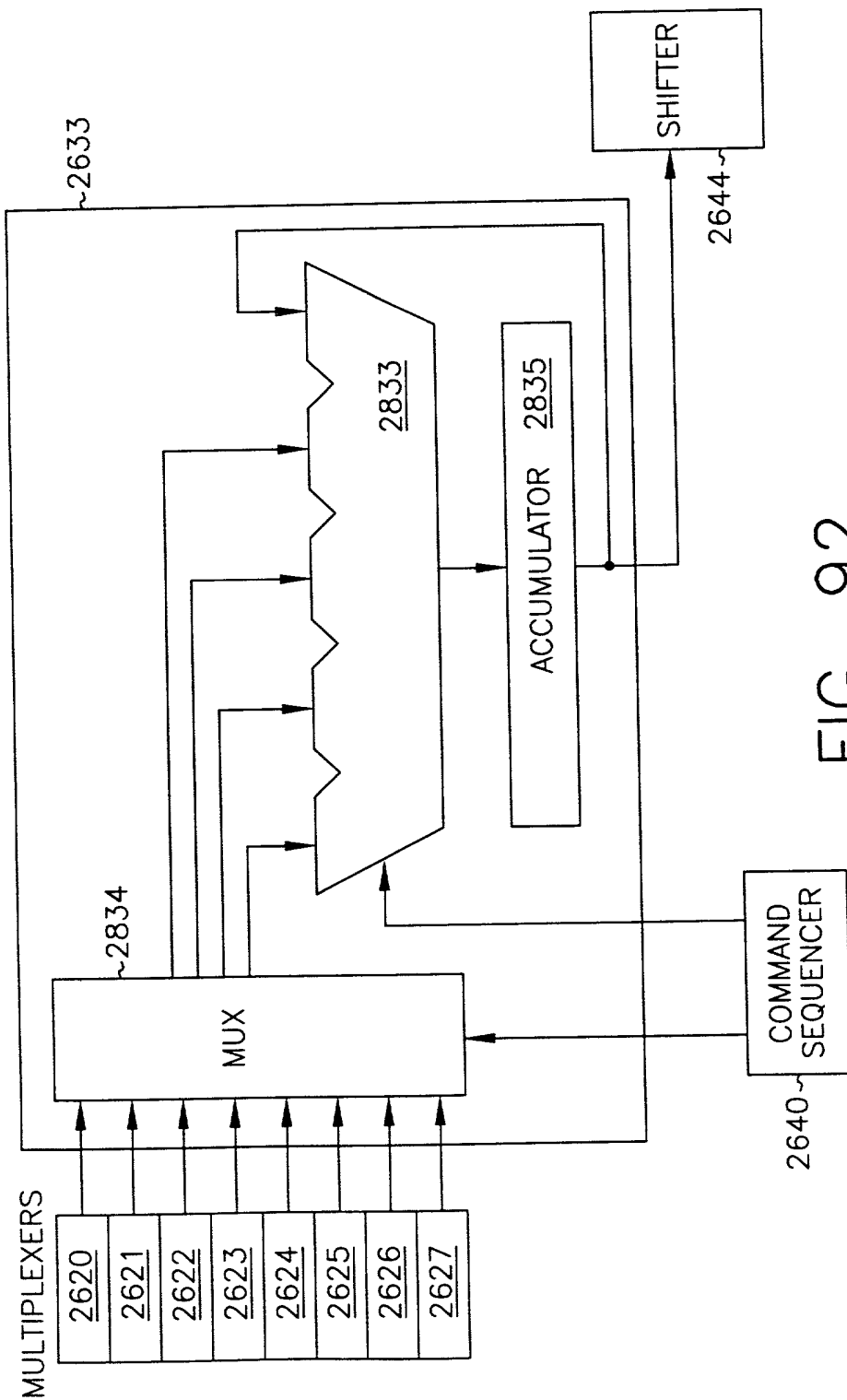


FIG. 92

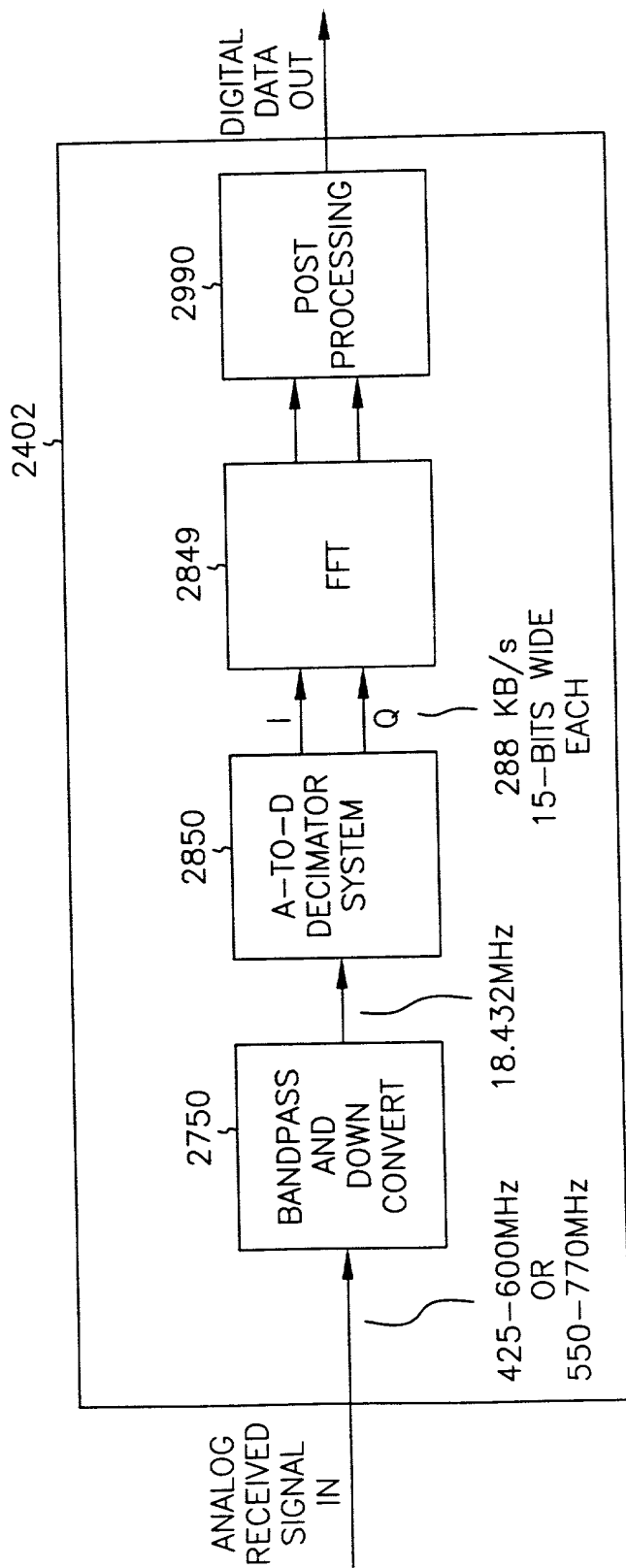


FIG. 93

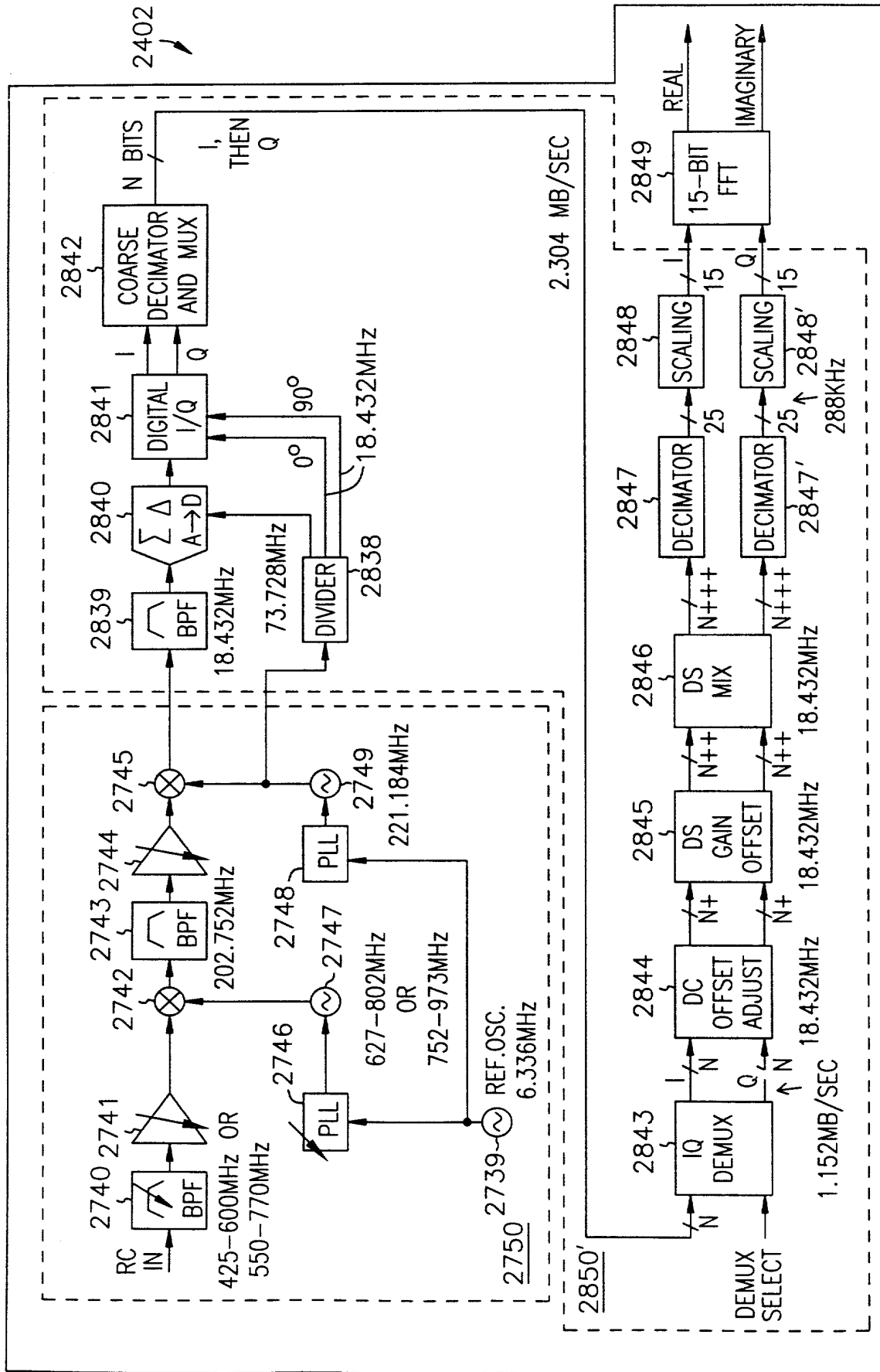


FIG. 94

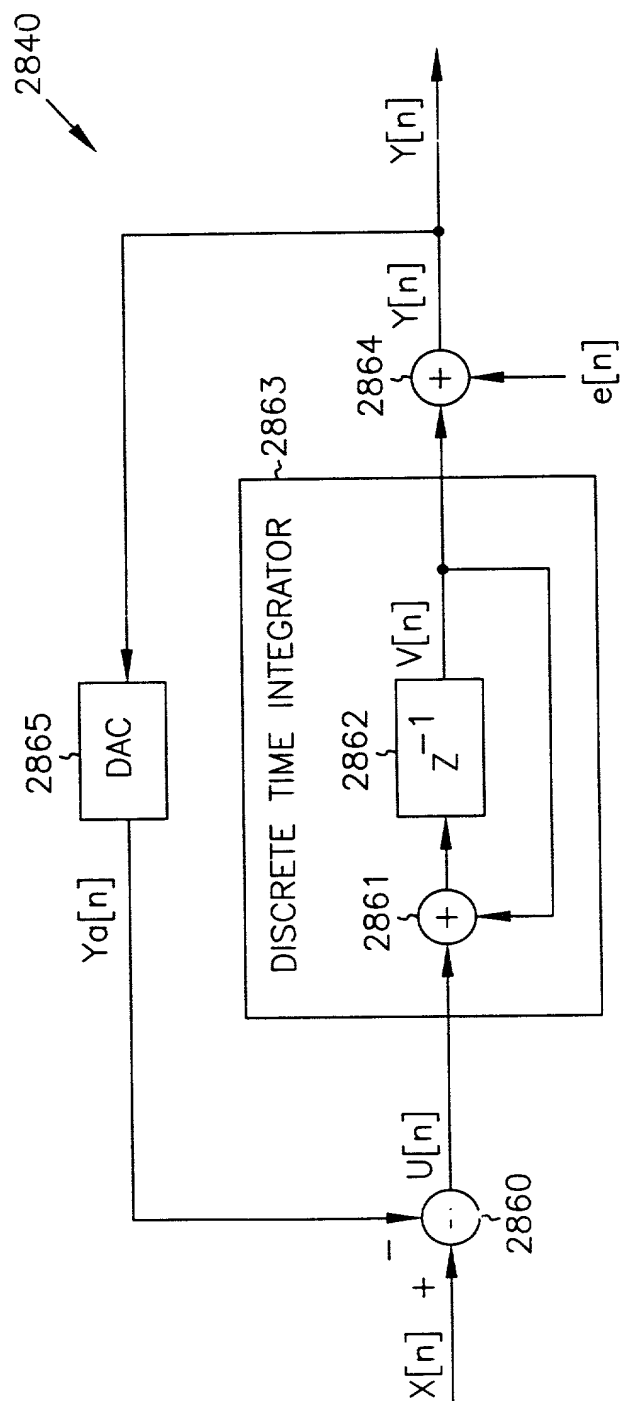


FIG. 95

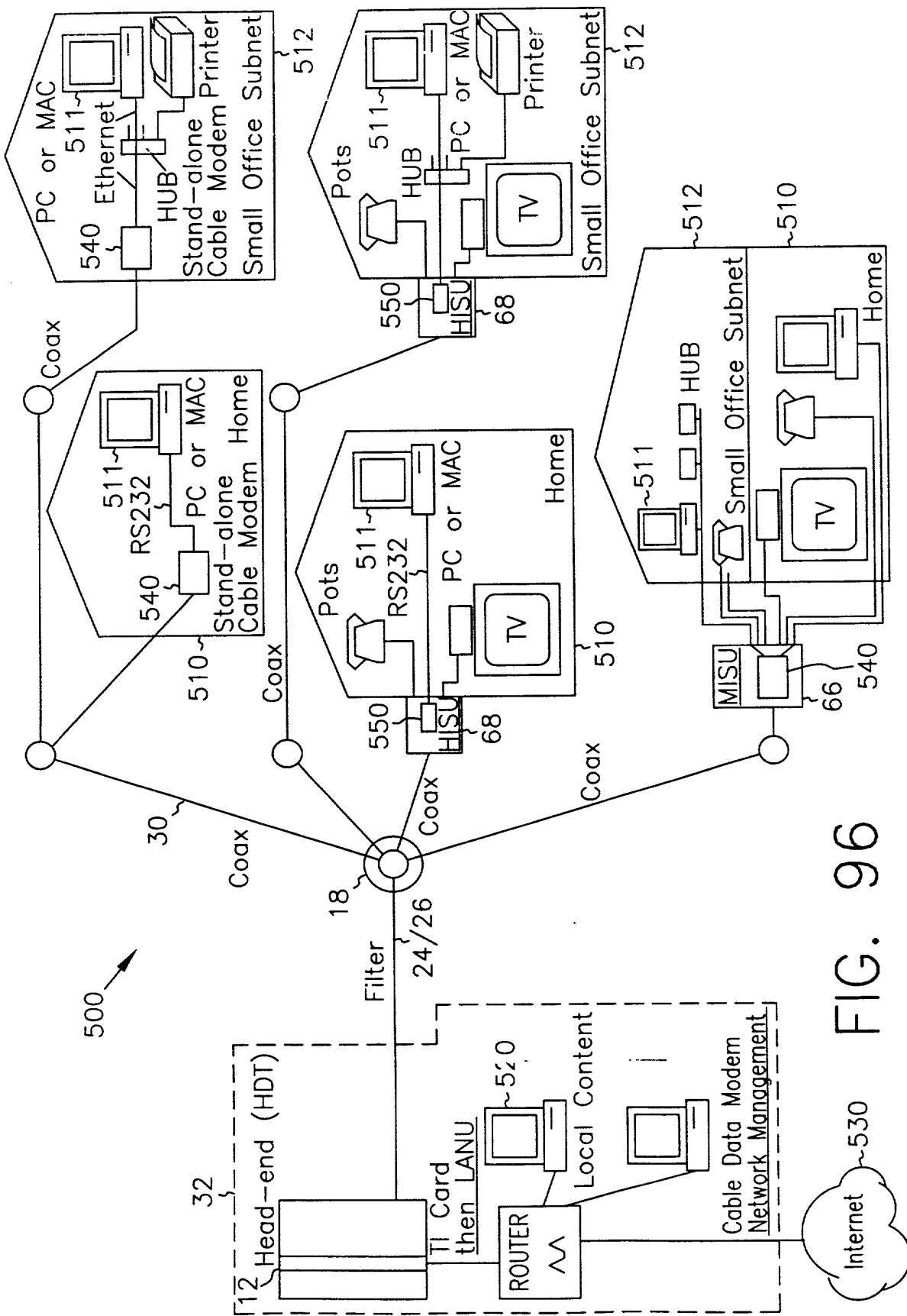


FIG. 96

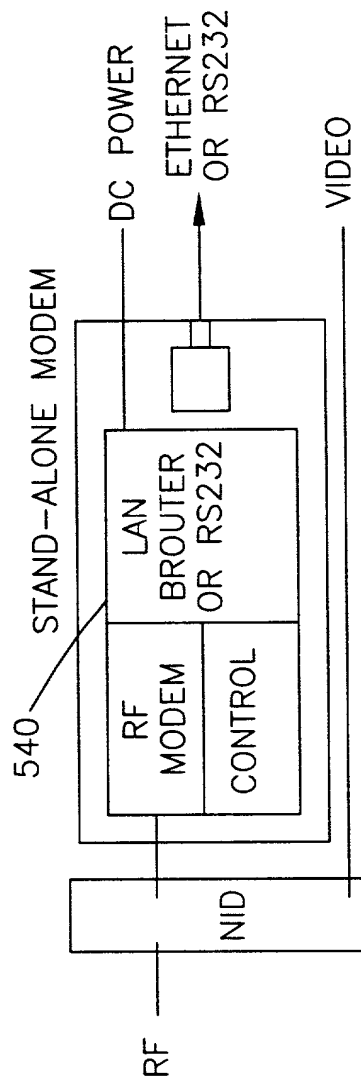
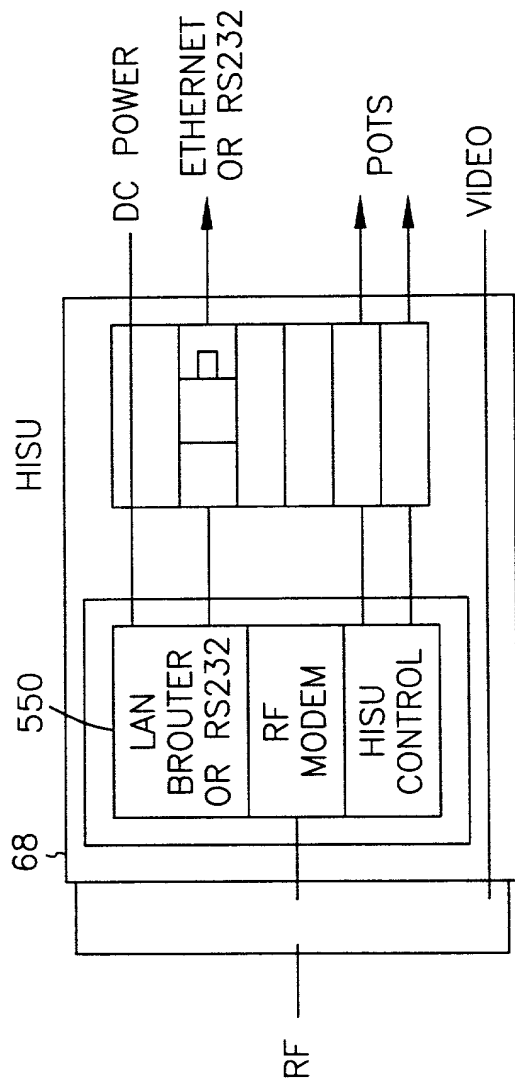


FIG. 98

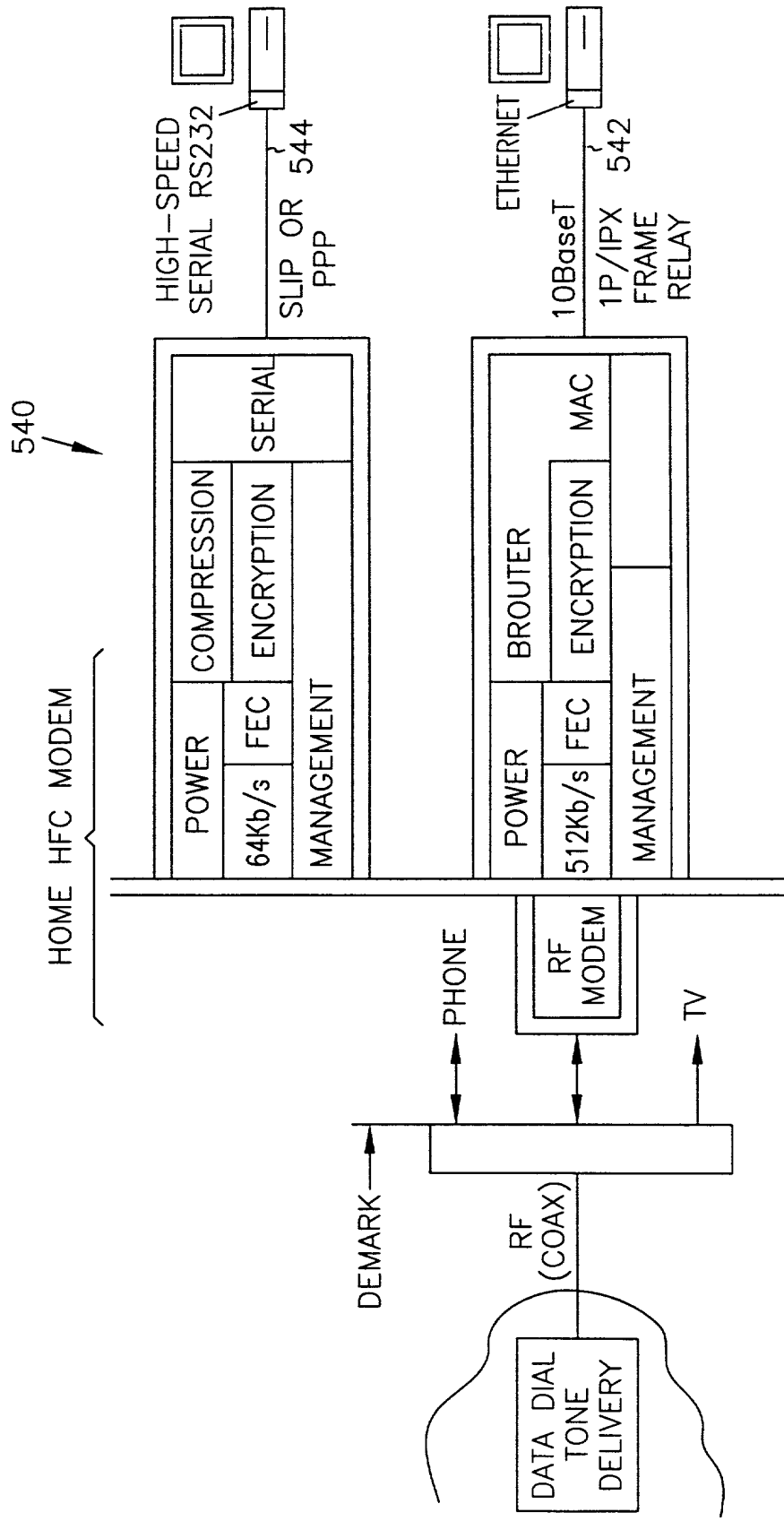


FIG. 99

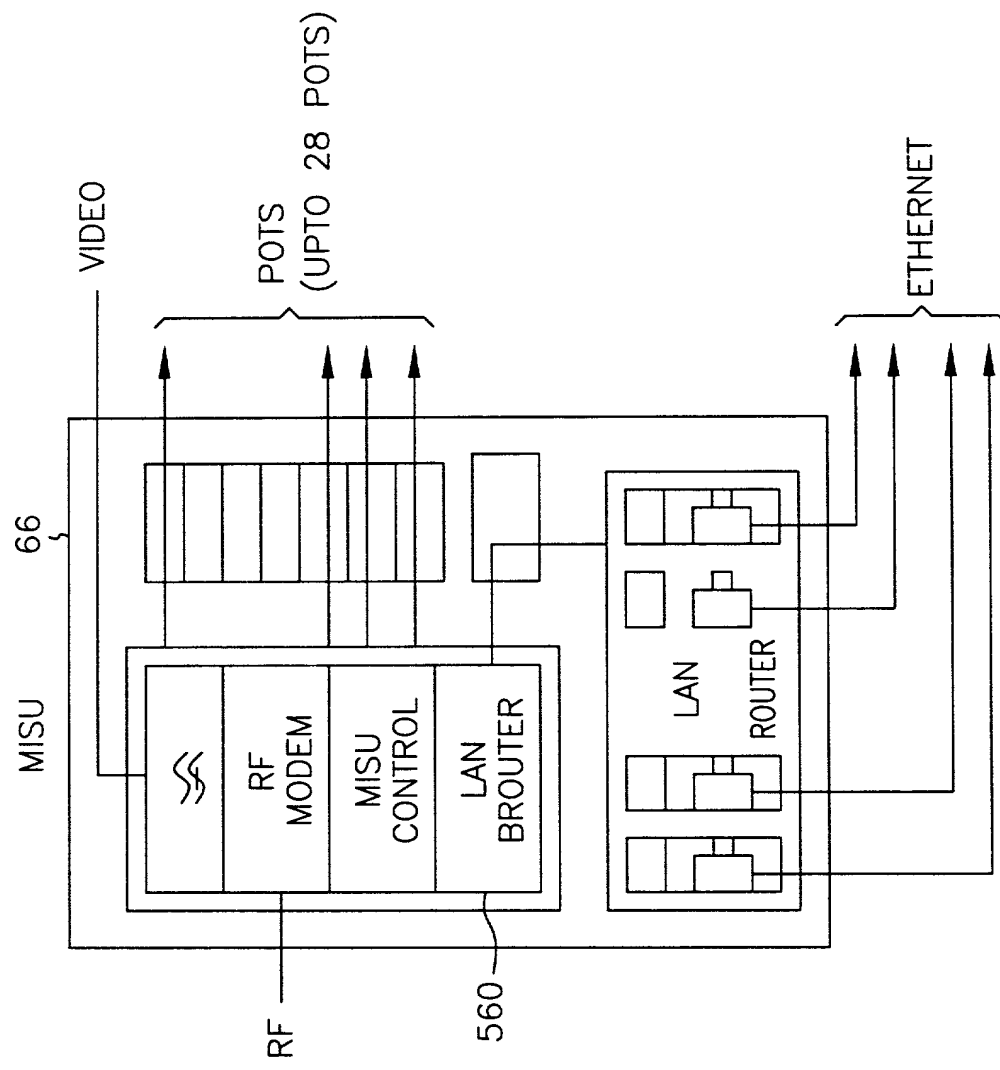


FIG. 100

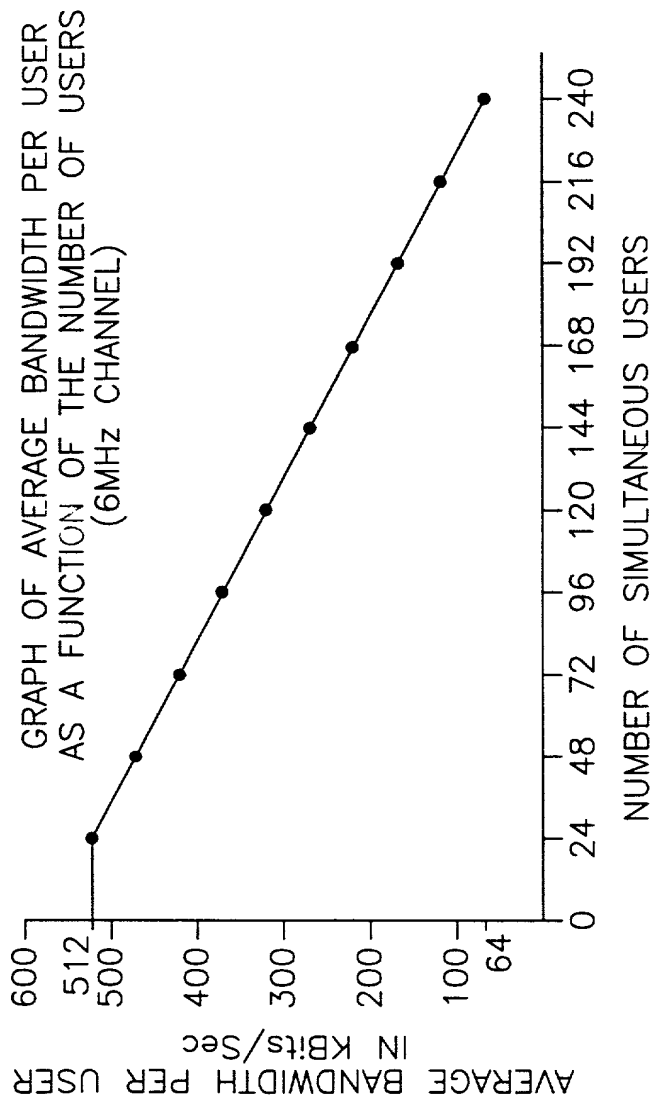


FIG. 101

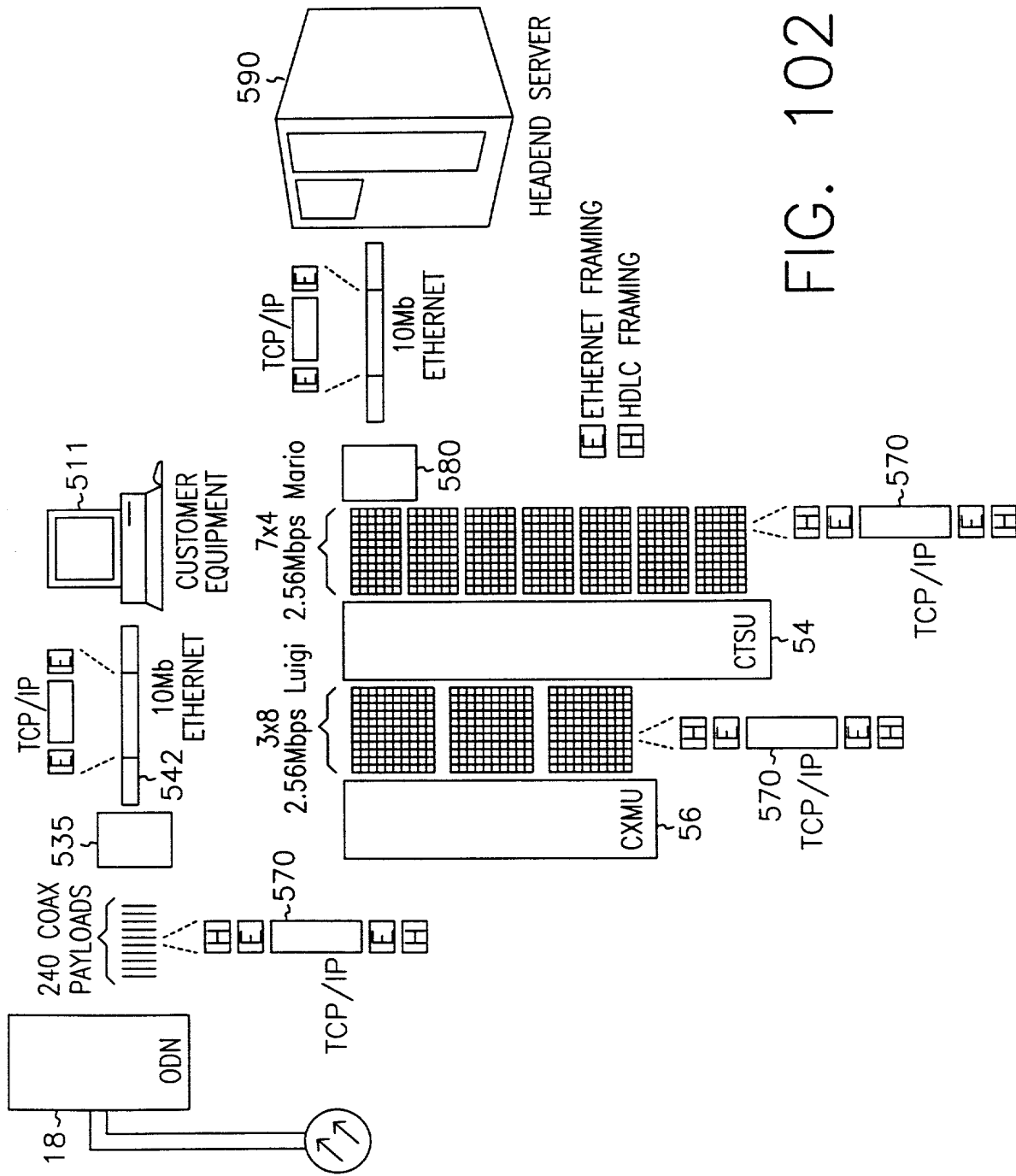


FIG. 102

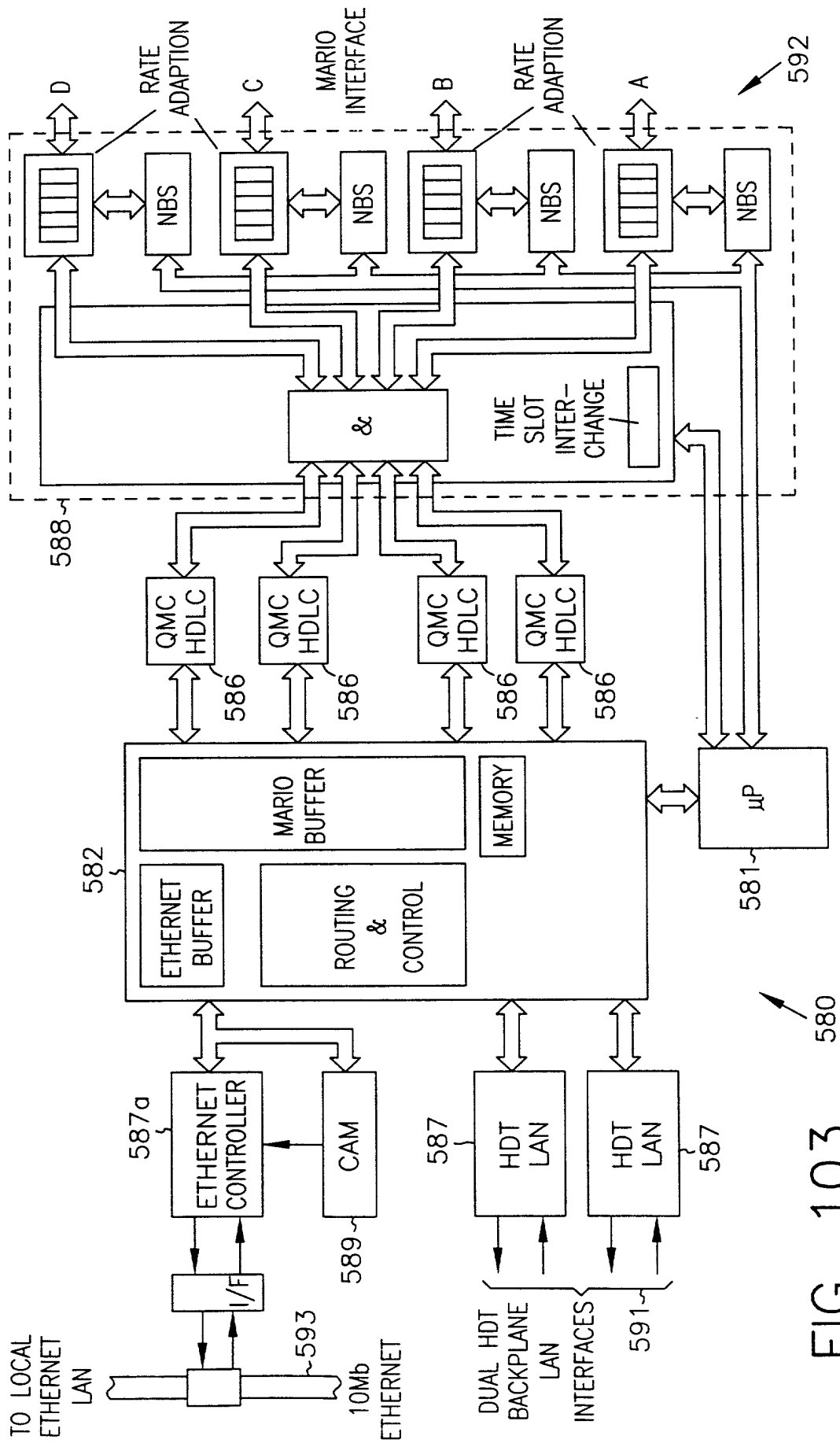


FIG. 103

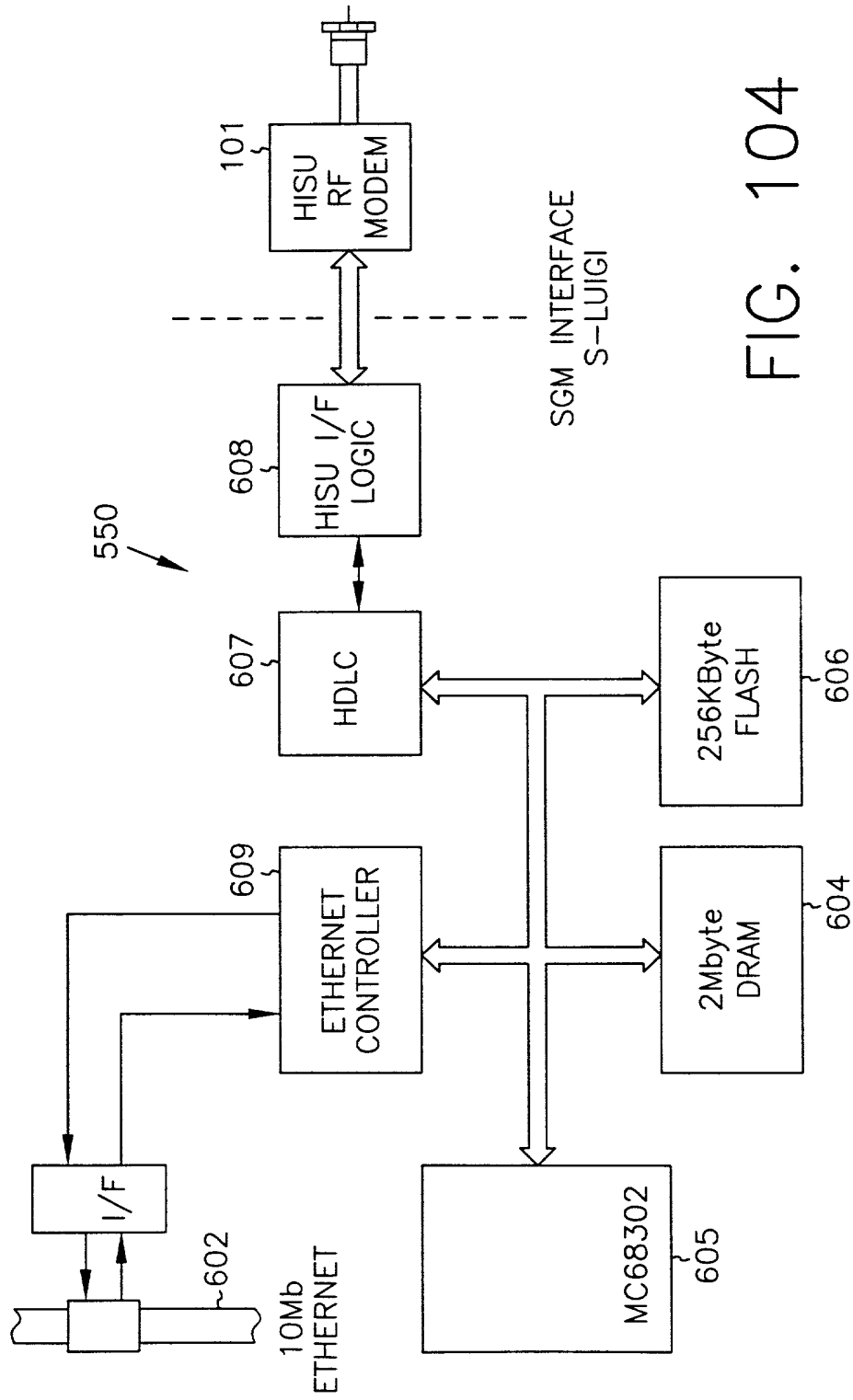


FIG. 104

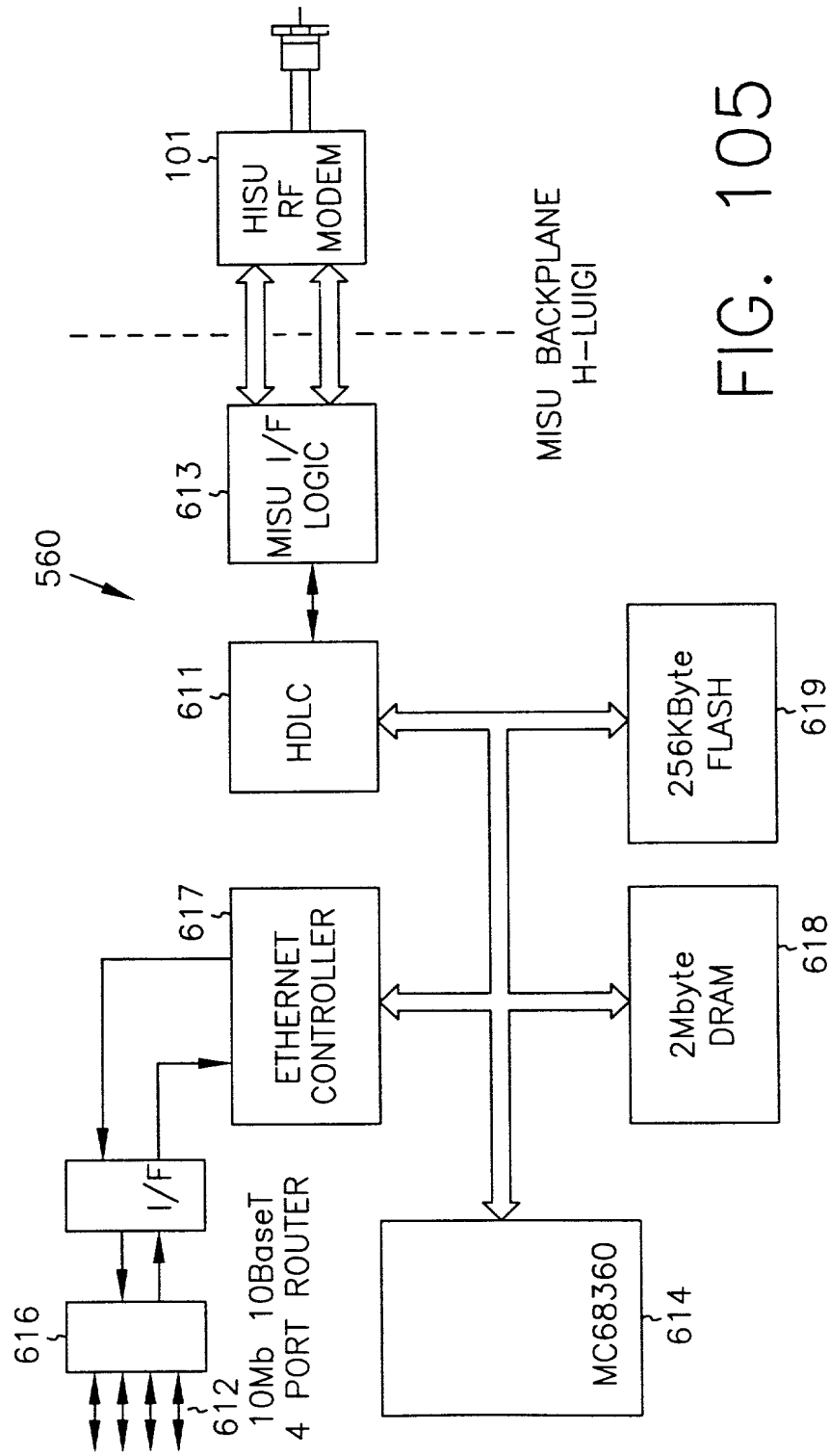


FIG. 105

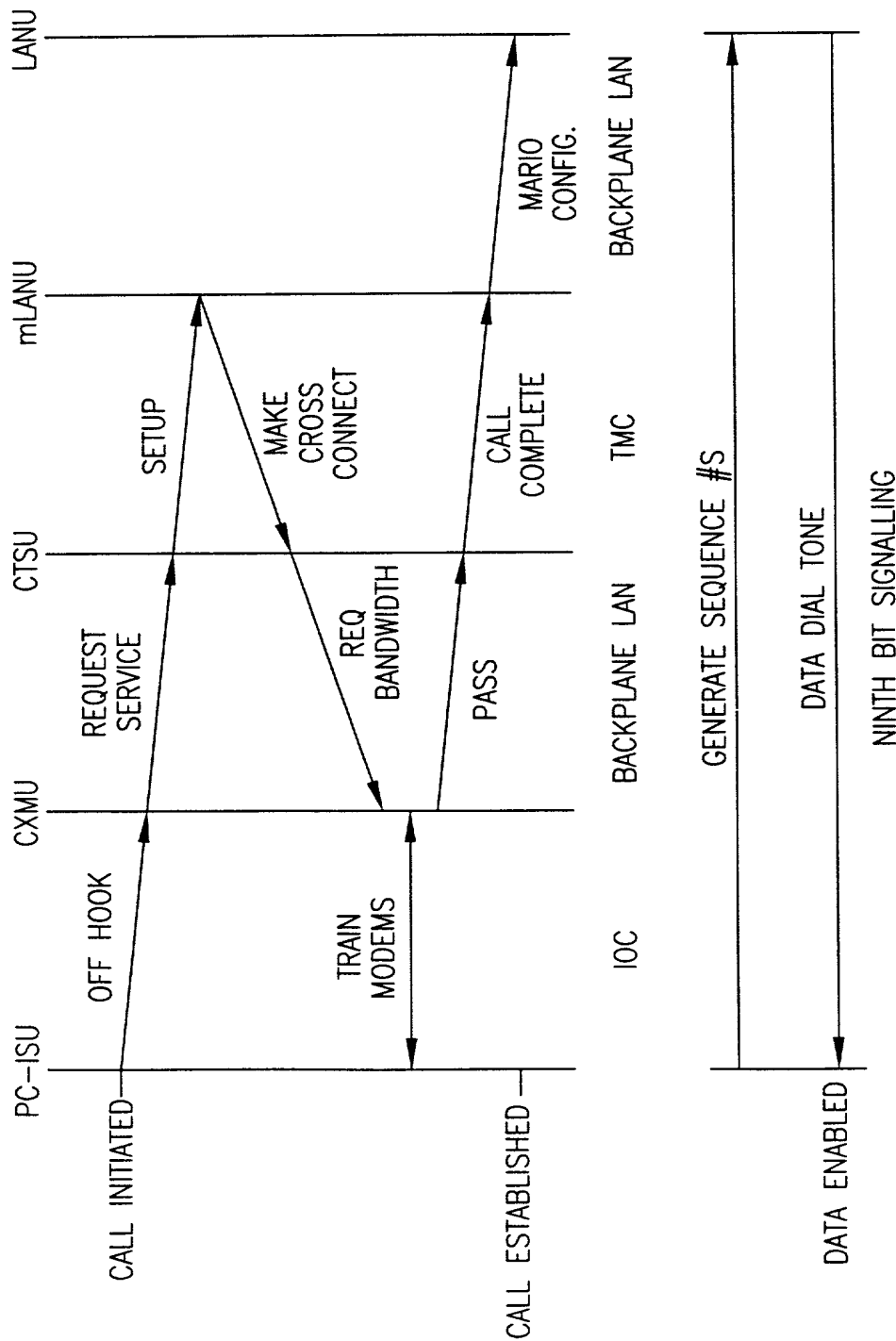


FIG. 106

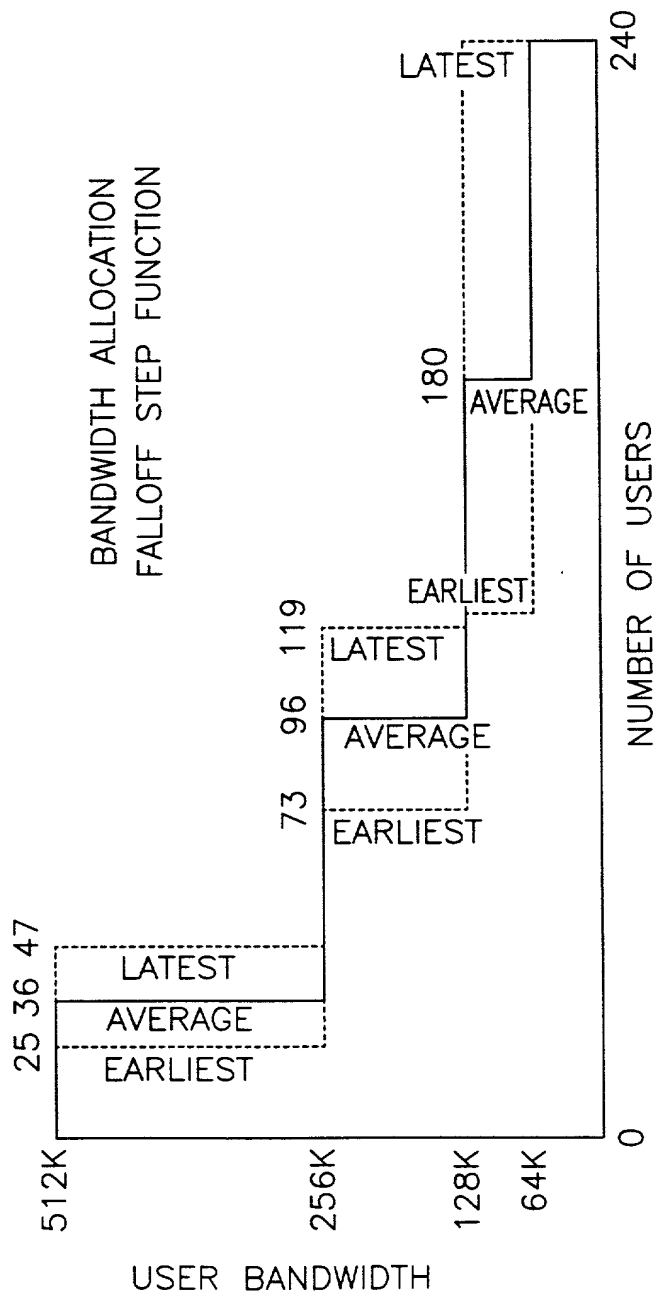


FIG. 107

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

THE RF SPECTRUM OF 24 USERS WITH 512Kbs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

ADDING THE 25th USER

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

ADDING THE 26th USER, ETC

FIG. 108

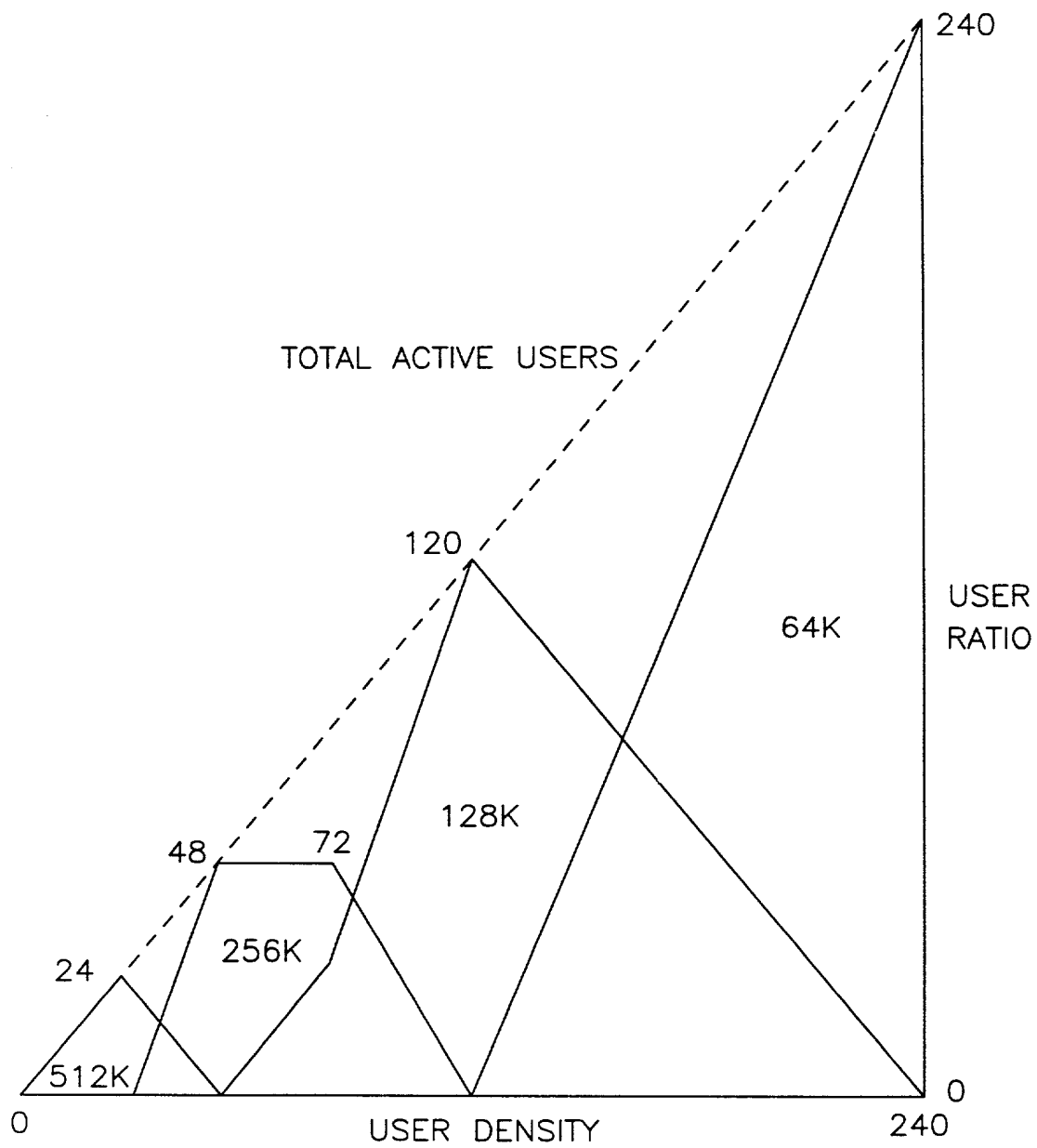


FIG. 109

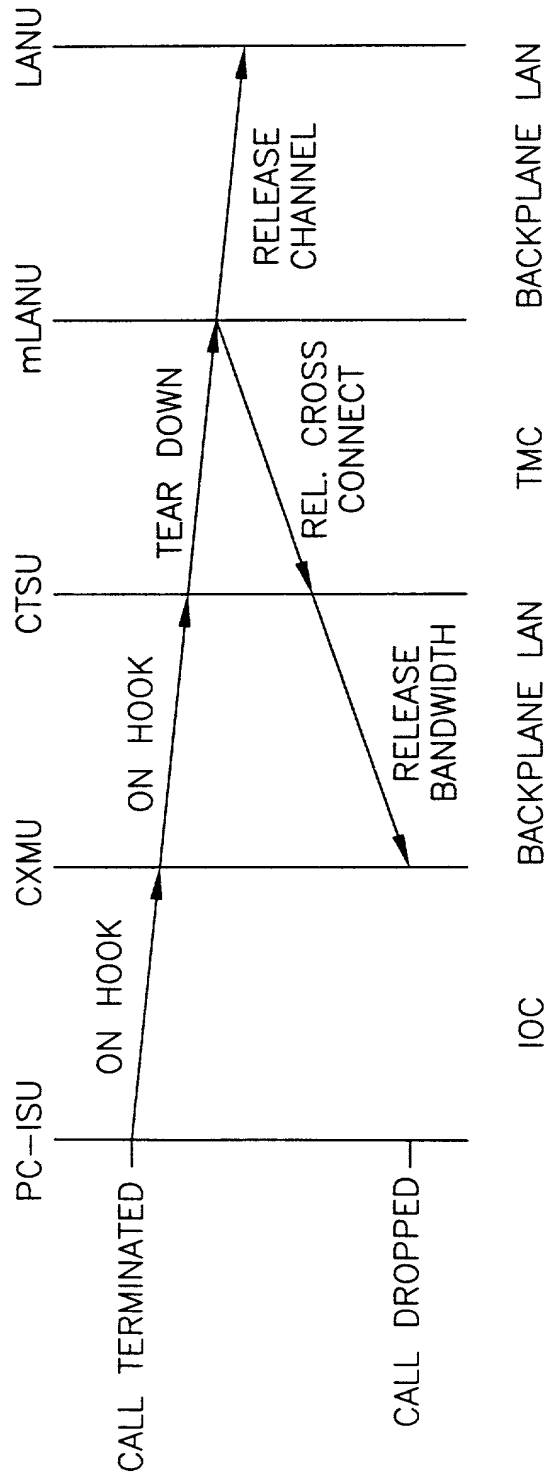


FIG. 110

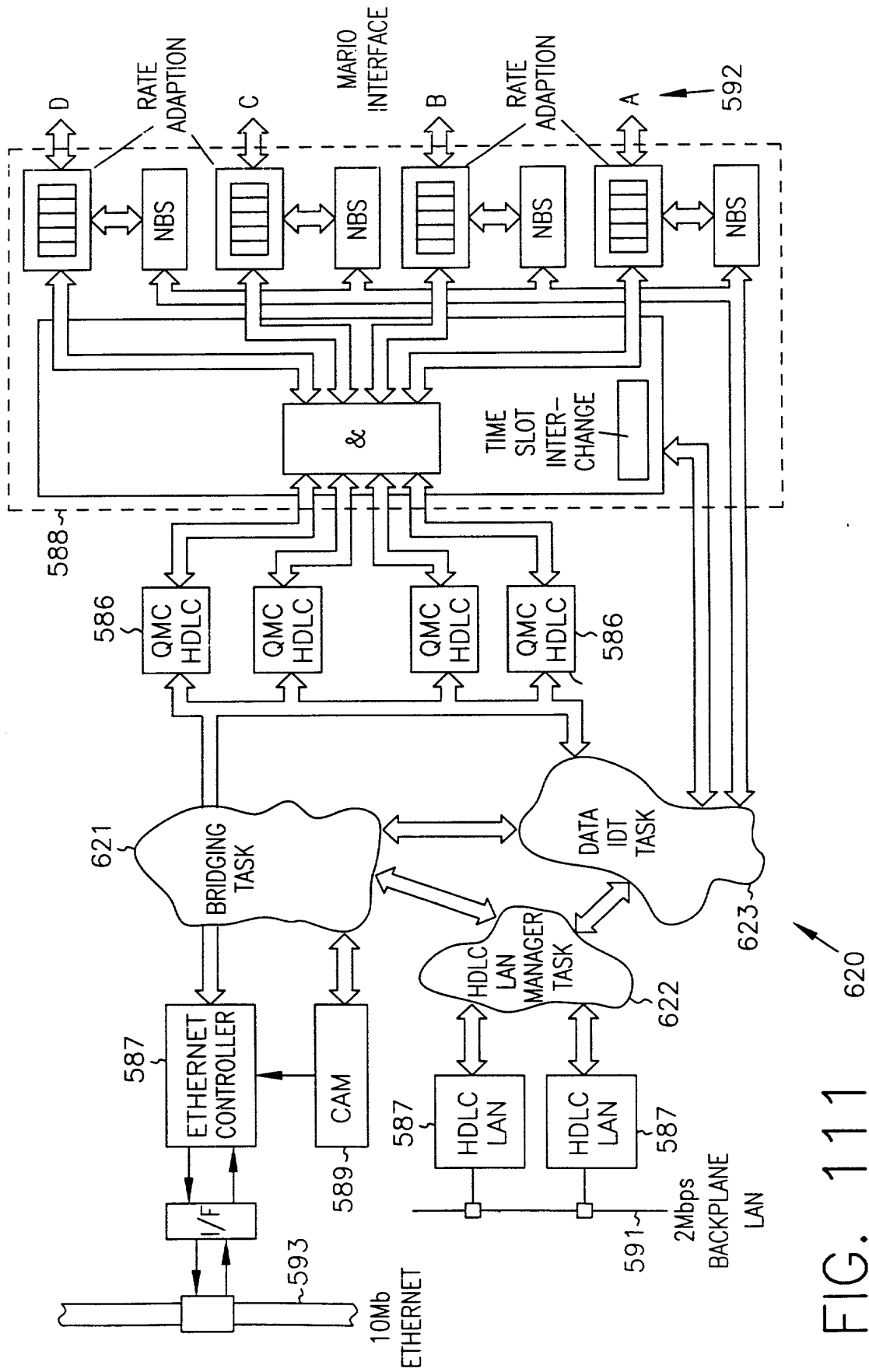


FIG. 111

620

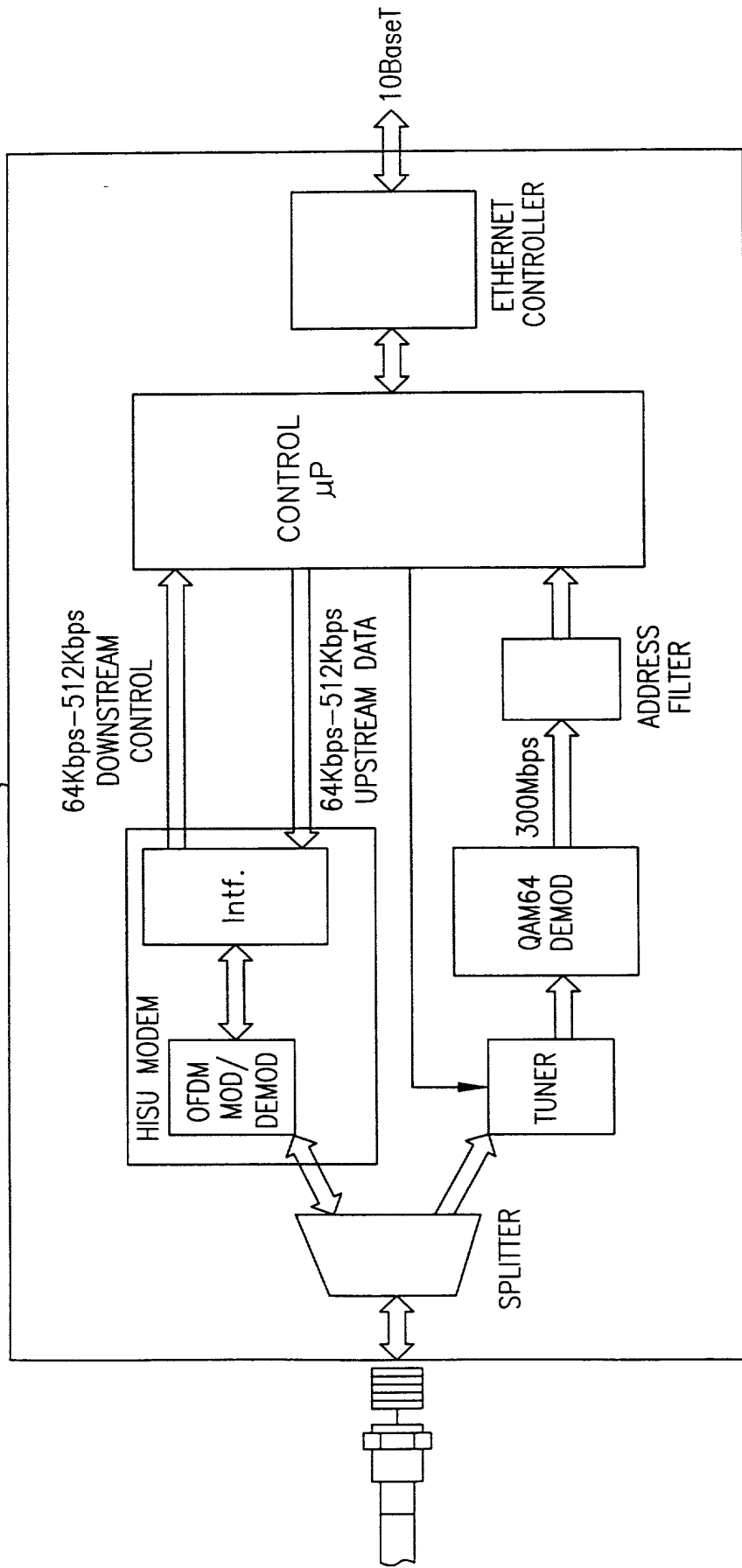


FIG. 112

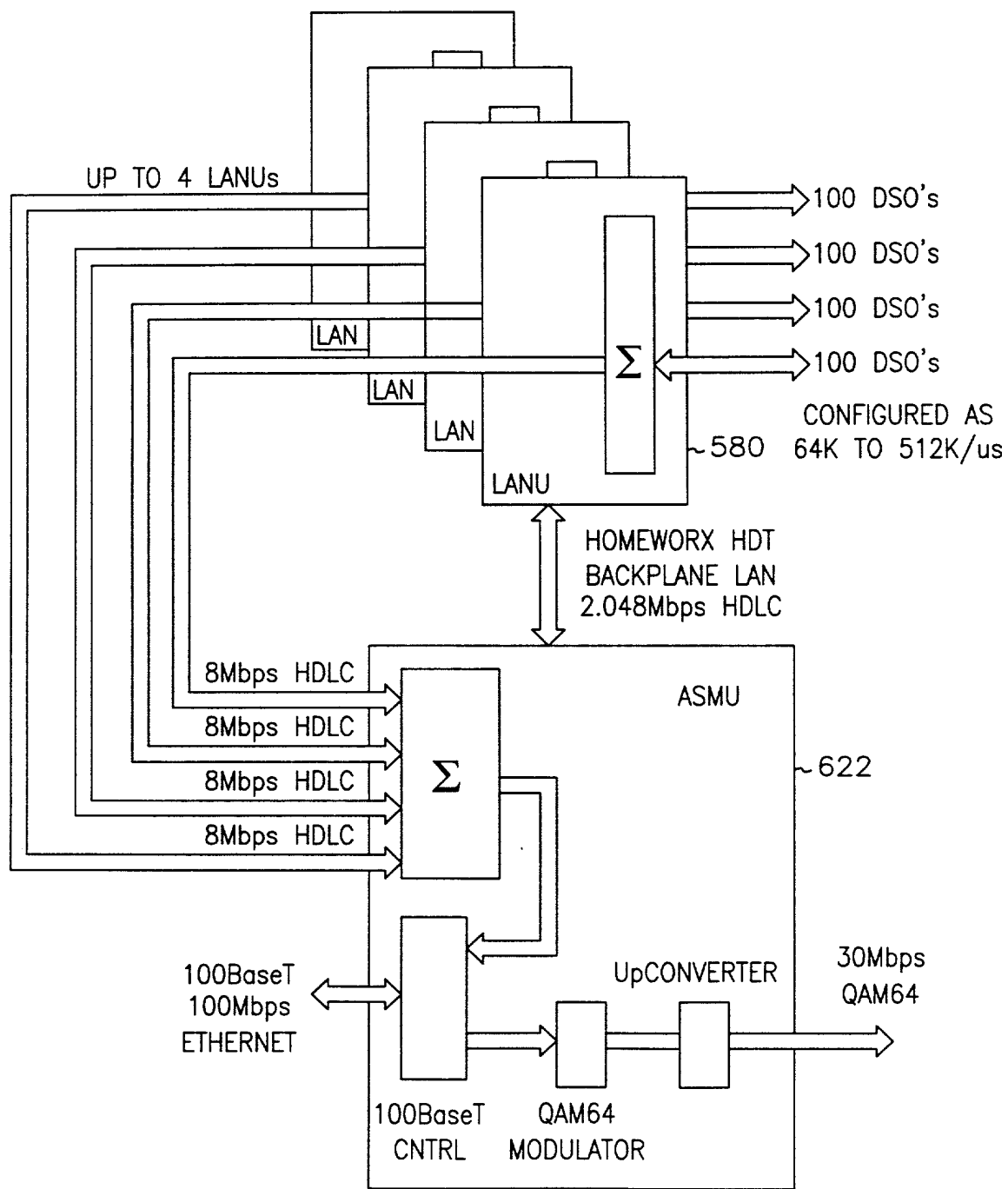


FIG. 113

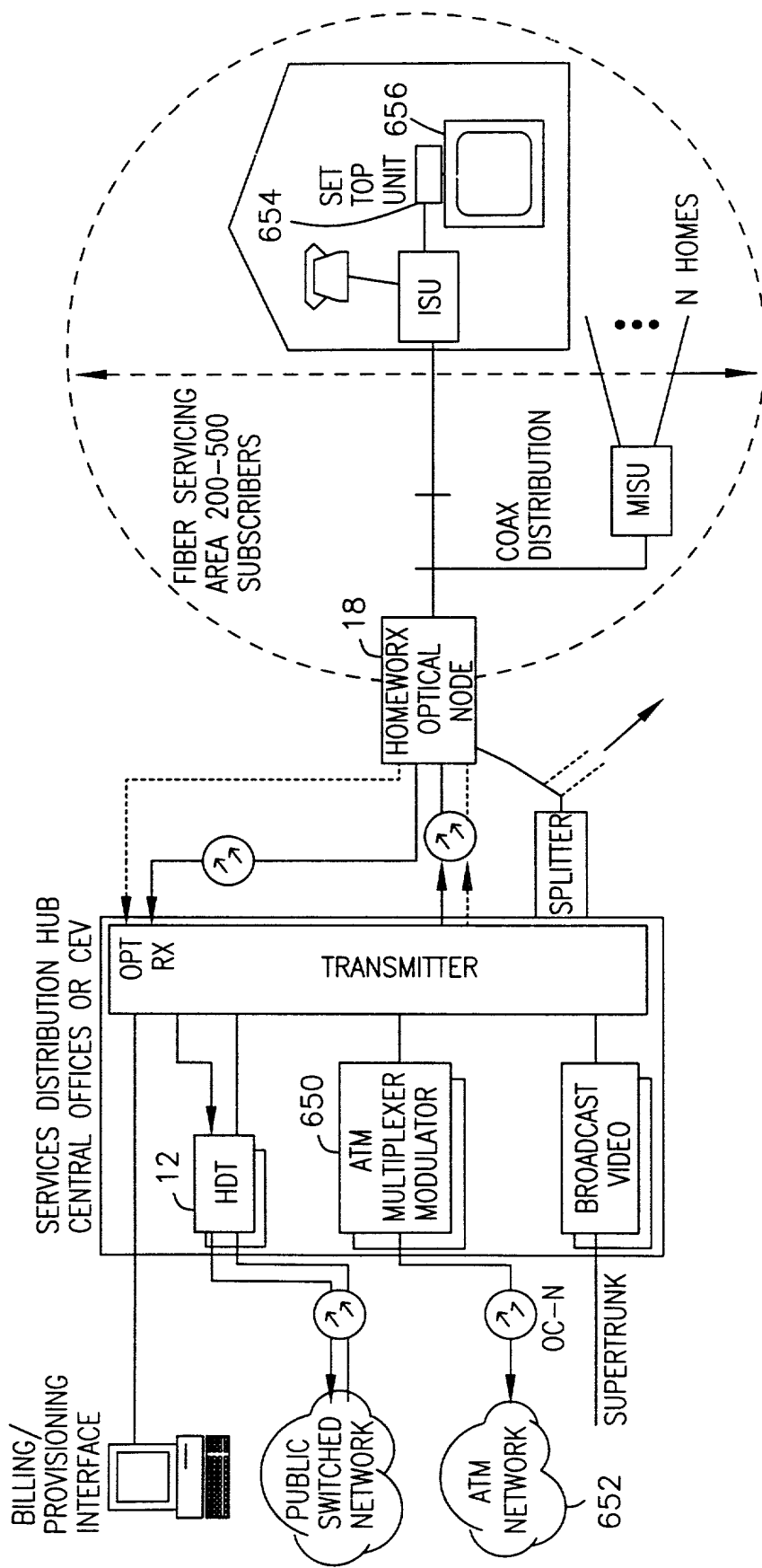


FIG. 114

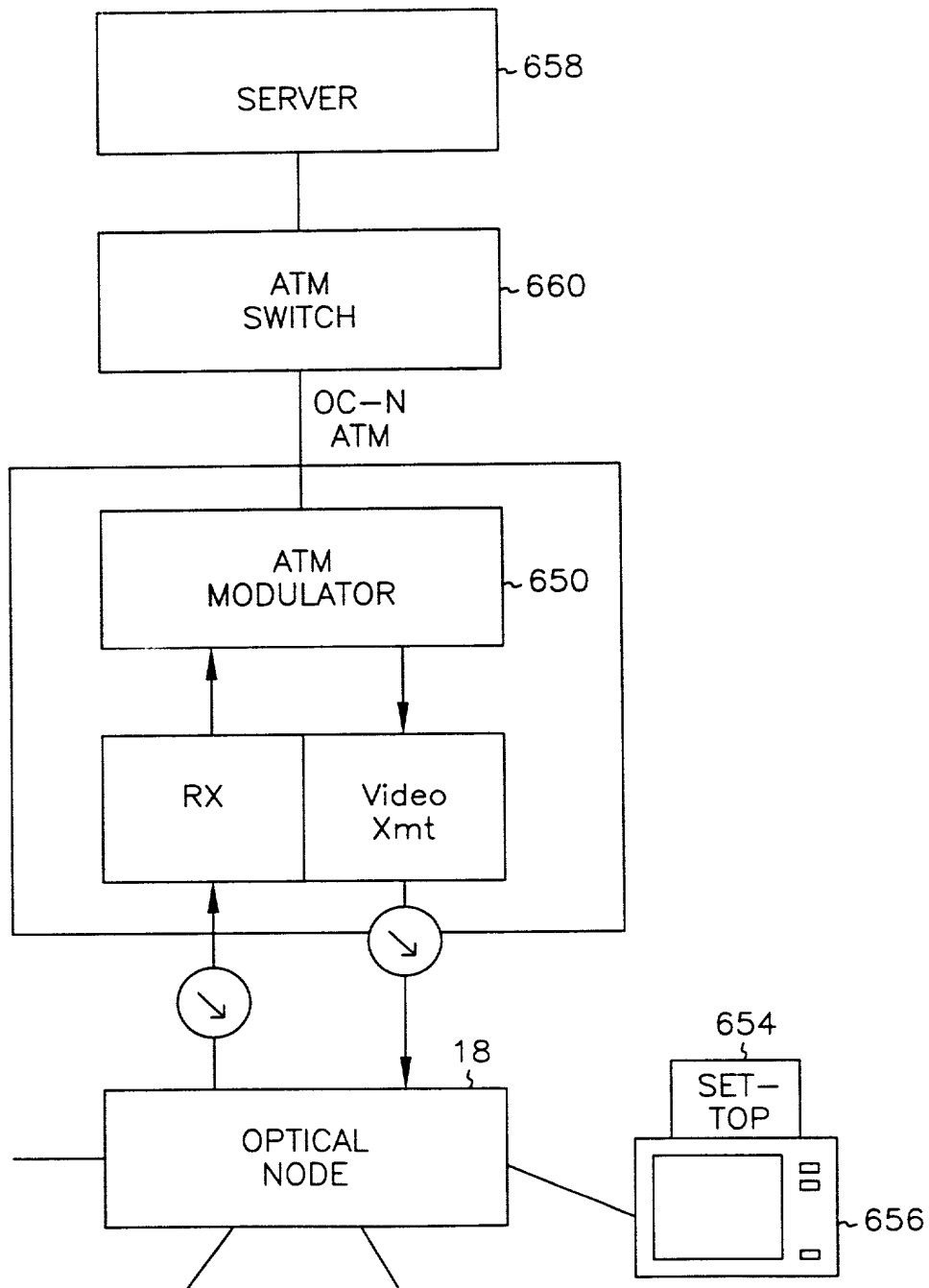
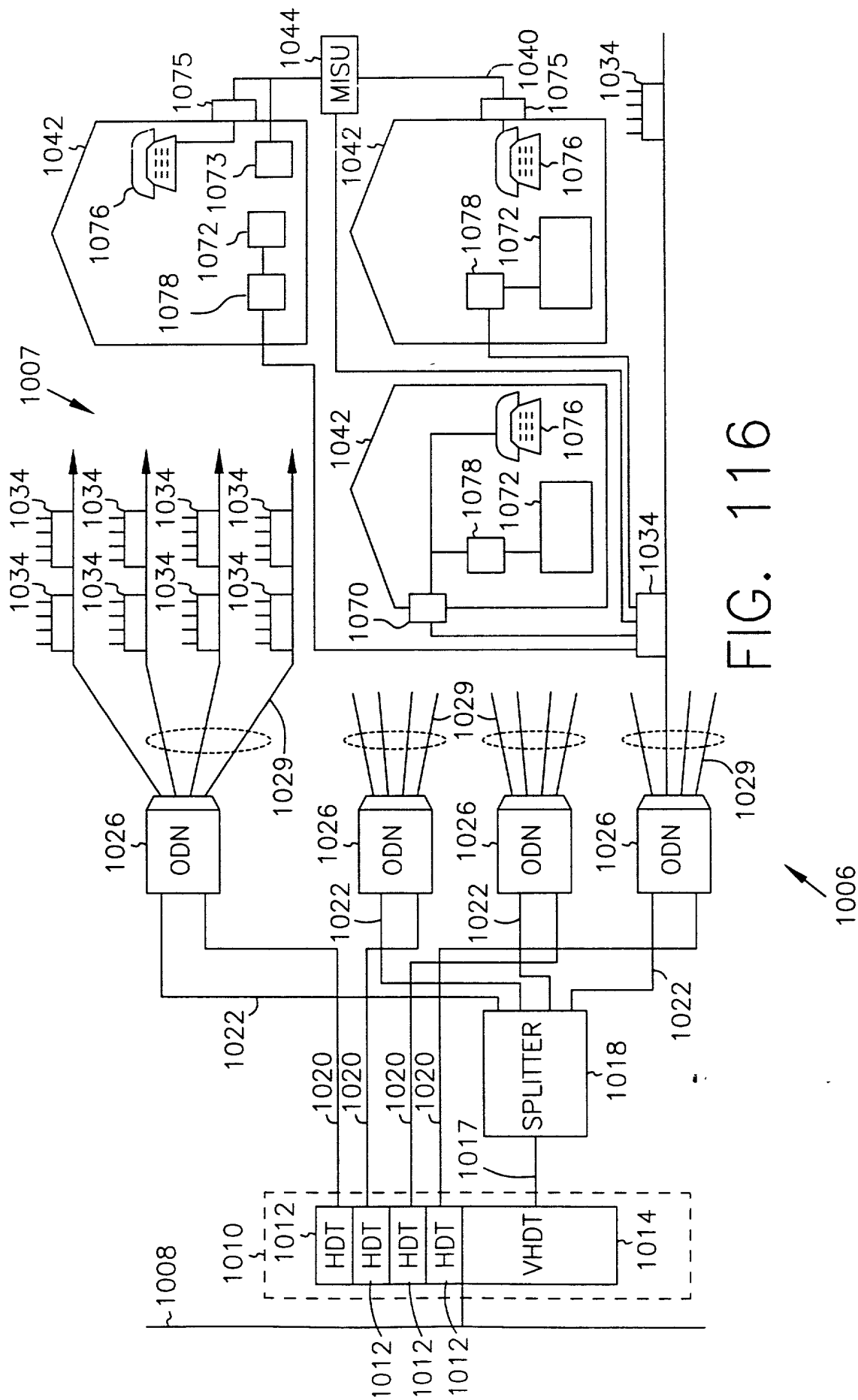


FIG. 115



1012

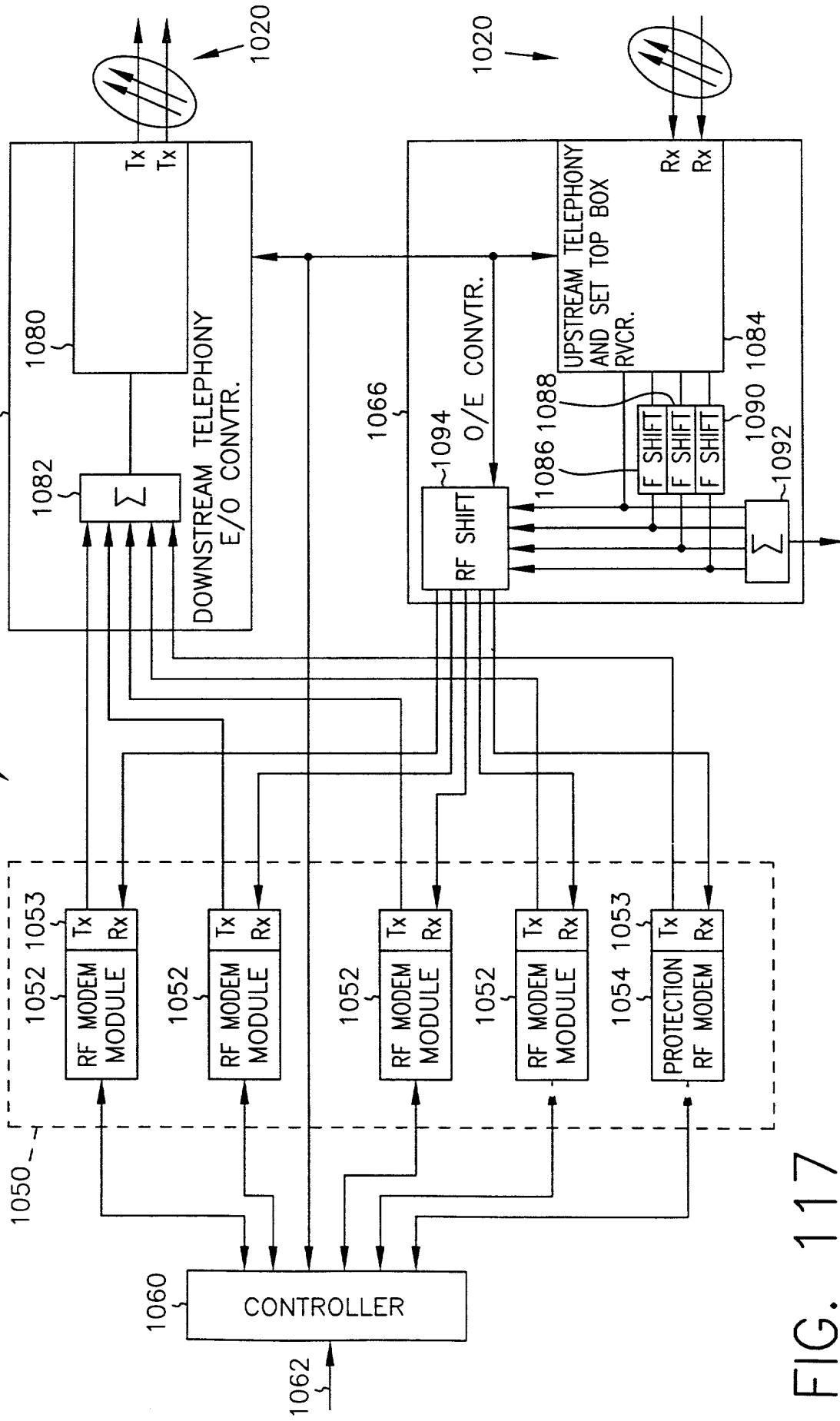


FIG. 117

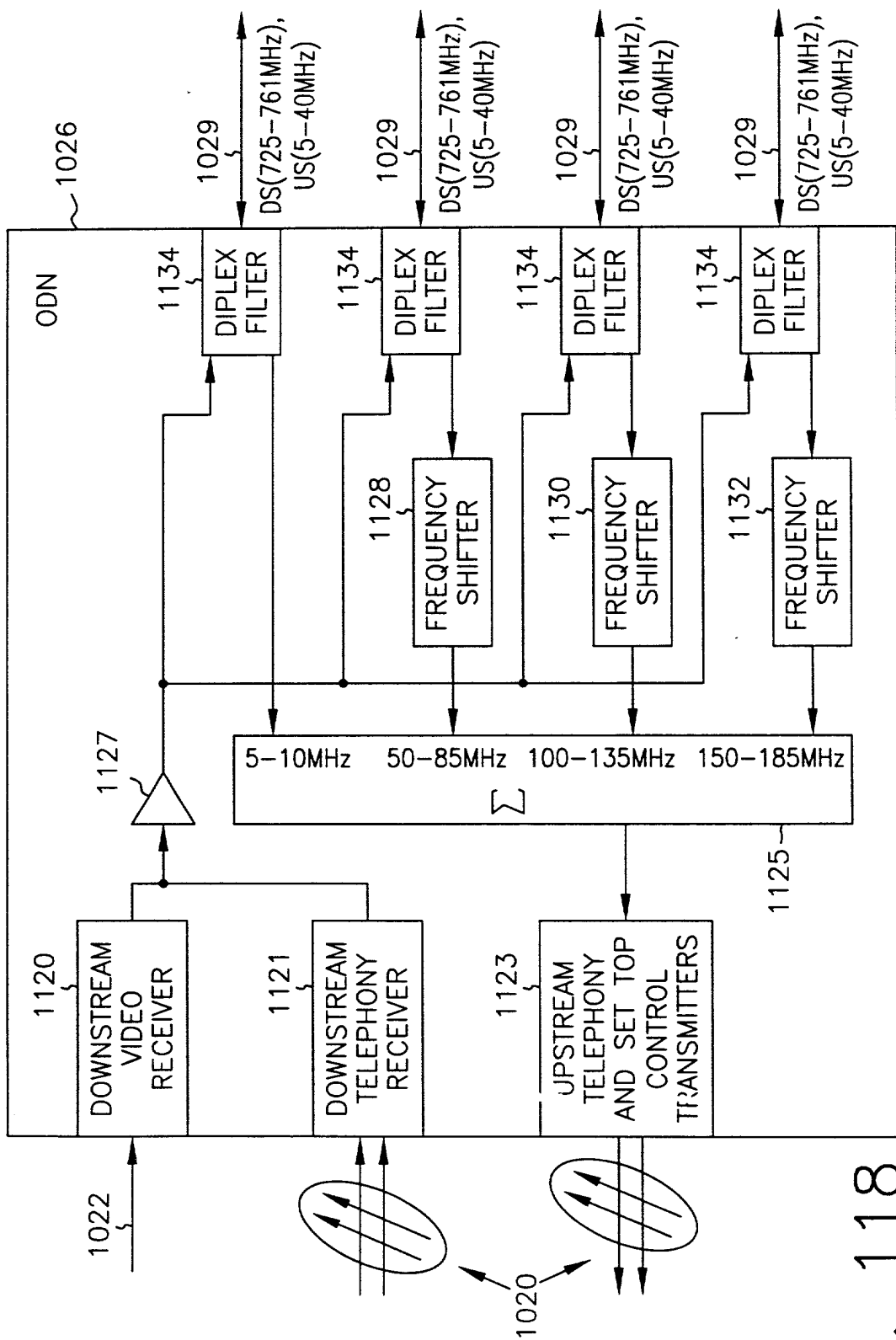


FIG. 118

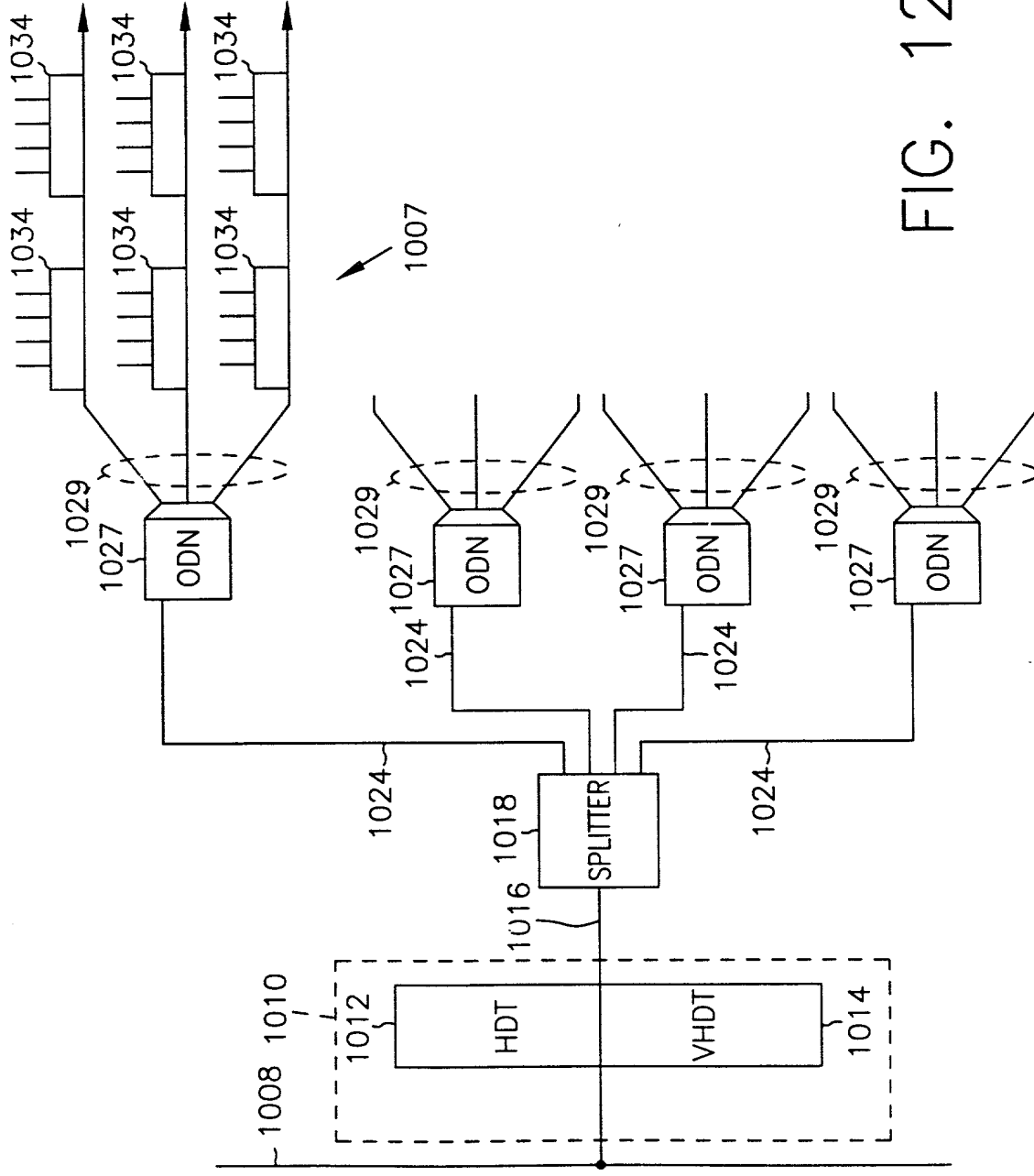


FIG. 120

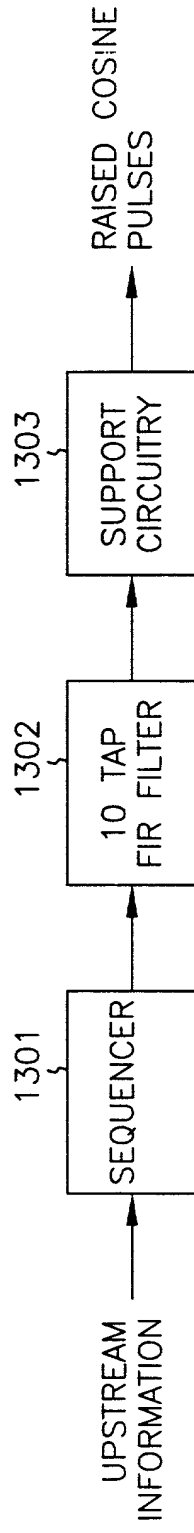


FIG. 121

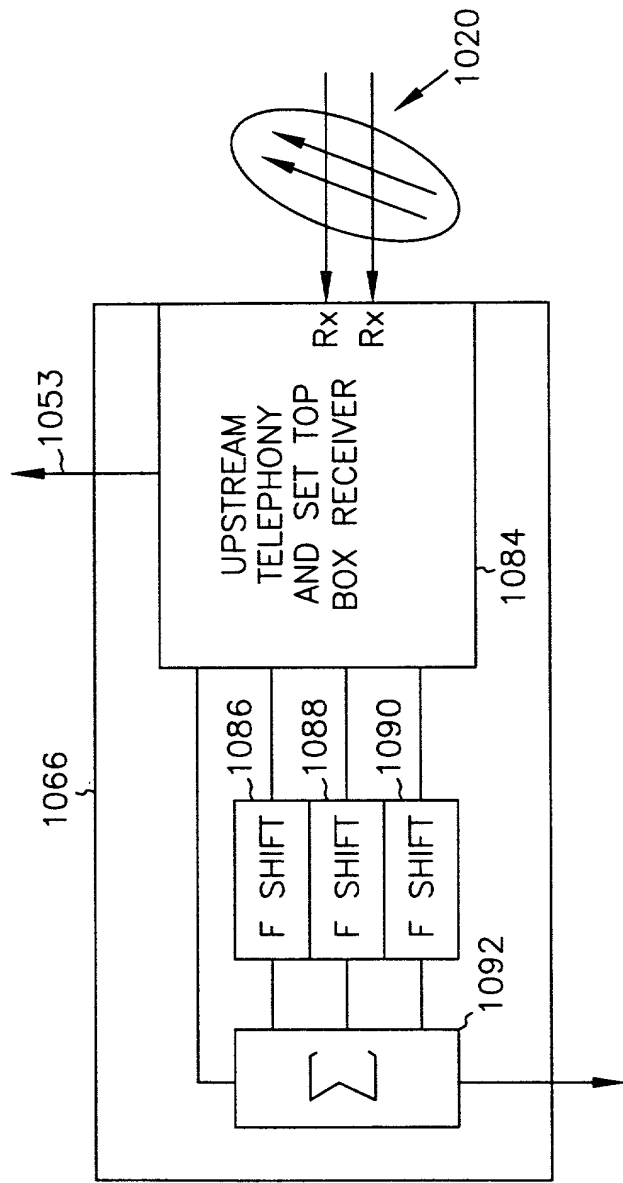


FIG. 122

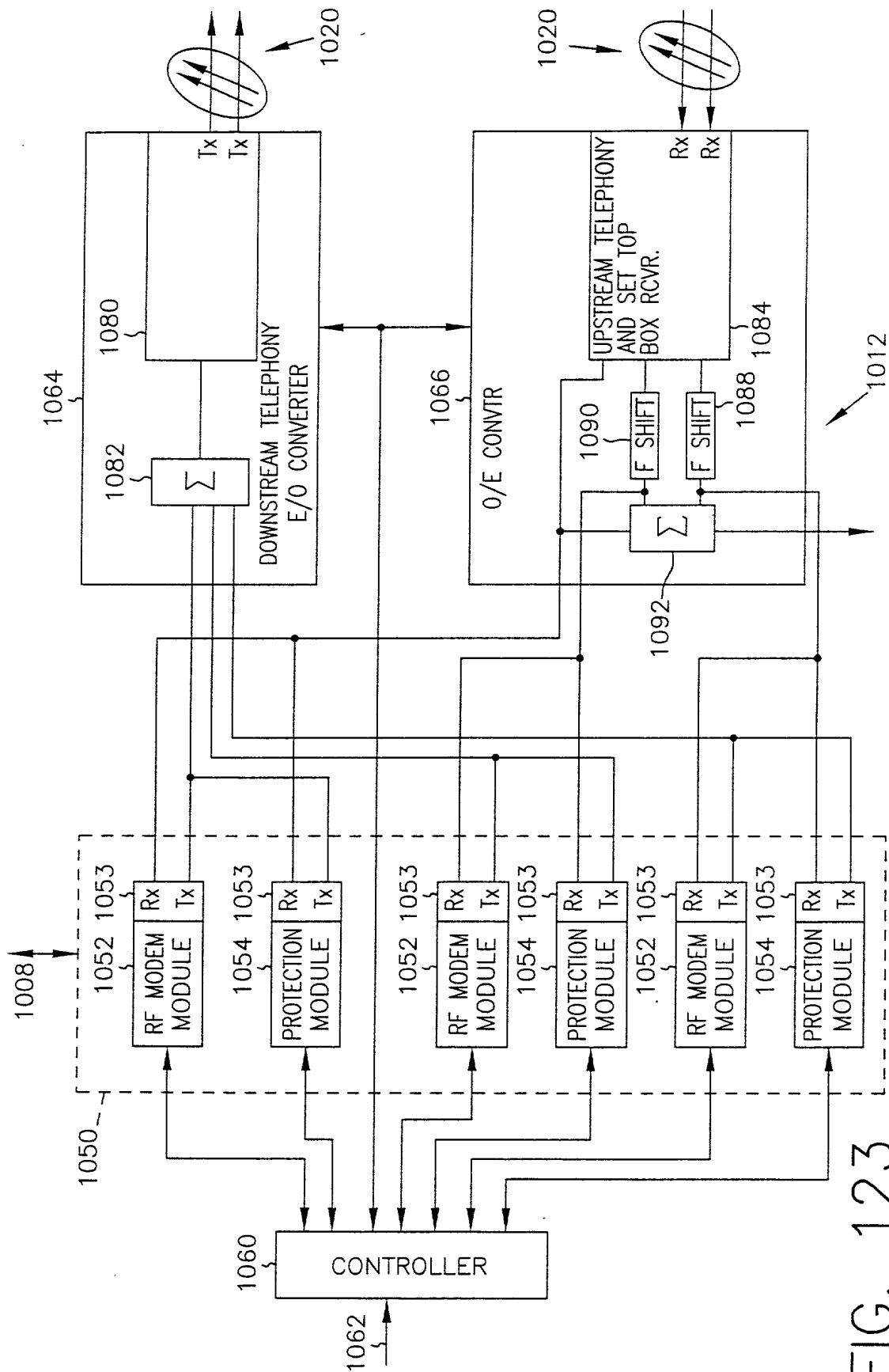


FIG. 123